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NORTH AMERICA;

FROM

BOSTON TO THE MISSISSIPPI.

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CONTENTS.

1.—APPENDIX; DESCRIPTION OF THE BANKS SITUATE BETWEEN CAPE SABLE AND CAPE COD, TO THE EASTWARD OF BOSTON.

CAPE ANN TO CAPE COD, INCLUDING BOSTON BAY.

CAPE COD TO NANTUCKET ISLAND.

2.—FROM NANTUCKET ISLAND TO PHILADELPHIA.

3.—FROM THE DELAWARE TO THE GULF OF FLORIDA.

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APPENDIX.

DESCRIPTION OF THE BANKS SITUATE BETWEEN CAPE SABLE AND CAPE COD TO THE EASTWARD OF BOSTON.

Variation 13½° W., increasing about 6′ annually.

Before we proceed to the navigation of Boston Bay, it may be useful and proper to notice and describe, as well as our information will admit, the Sand Banks and soundings which the mariner, navigating this part of the coast of America, situate between Cape Sable and Cape Cod, will, in all probability, fall in with in his passage. These are Cashes Ledge, Jeffrey's Bank, Jeffrey's Ledge, and St. George's Bank.*

CASHES LEDGE.—The position of the rock on this ledge was accurately determined by Admiral Charles H. Davis, then on the U.S. Coast Survey. It is in latitude 42° 56′, and longitude 68° 51′ 30″, and has on it 26 feet. It is on the eastern edge of the bank, and is a flat white rock of from two to three hundred feet in extent. It is called Ammen's Rock, from Captain D. Ammens of the U.S. Navy.

South of the flat rock there is a gully of 90 fathoms water, which runs in upon the bank in a south-westerly direction. Upon the south side of the gully, 3 miles south of the flat rock, there is a shoal of 7 fathoms, whence the soundings run suddenly to 15 and 30 fathoms on all sides except the east, where it deepens suddenly to 80 fathoms.

N. by W., 9 miles from the flat rock, there is a shoal of 14 fathoms; between them there are from 10 to 35 fathoms, rocky bottom; on the rocky bottom there is kelp of 45 feet in length, and on the flat rock there is none.

THE FIPPENIES.—The Fippenies are some shoaler soundings than in the gully between them and Cashes Ledge: they consist of a bottom of 36, 38, and 40 fathoms, to a depth of 55 fathoms, and are situate 18 miles to the W. by S. of the Ammen's Rock of the Cashes Ledge. The extent of the shoal ground is about 8 miles north and south, and 3 miles across east and west. Thirty-six fathoms is the depth about the middle, which is in latitude 42° 49′ and longitude 69° 13′. In the gully between the Fippenies and Cashes Ledge are from 60 to 90 fathoms.

JEFFREY'S BANK.—Surveyed by Lieut. Phelps, U.S.N.:—Shoalest sounding found, 46 fathoms. Matinicus Light bearing N. by W. ½ W., 25 miles distant. Another shoal spot, with 48 fathoms upon it, 11 miles S.S.W. ½ W. from the former soundings, with deep water between them.

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* In this Appendix, as well as in the Work that it is intended to accompany, the Bearings and Courses are Magnetic or by Compass; and the Distances are in Nautical Miles of 60 to a Degree. A cable's length equal to 100 fathoms. Longitude from Greenwich, westerly.

JEFFREY'S LEDGE.—Surveyed by Lieut. A. Maury, U.S.N. in 1858–59.

21 fathoms	Thatcher's Island	bearing	S.W. by W. $\frac{1}{2}$ W.,	distant	3	miles.
20	"	"	W.S.W. $\frac{1}{4}$ W.	"	$6\frac{3}{4}$	"
24	"	"	W. by S. $\frac{1}{4}$ S.	"	20	"
25	"	"	S.W. by W. $\frac{1}{2}$ W.	"	21	"
18	"	"	S.W.	"	$15\frac{3}{4}$	"
and	White Island Light	"	N.W.	"	$19\frac{1}{4}$	"

Lieut. J. Wilkinson's survey, 1860.

30 fathoms	Thatcher's Island	bearing	W. $\frac{3}{4}$ S.	distant	13	miles.
30	"	"	S.W. by W.	"	34	"
and	Boon Island Light	"	W.N.W.	"	$12\frac{1}{4}$	"

Shoalest soundings, 18 fathoms, is near the western edge of the ledge, and about midway between the northern and southern limits of it. One detached ridge is separated from the northern end by deep water, showing soundings varying between 80 and 90 fathoms.

ST. GEORGE'S BANK.—This bank was very little known until it was regularly surveyed in 1821, by the United States schooner "Science," and the sloop "Orbit," under the orders of Captain Isaac Hall. The following description is a copy of his report:—

"There are properly four shoals on St. George's Bank; the whole of them are included between the latitude of 41° 34′, and 41° 53′ 30″, and longitude 67° 18′, and 67° 59′. Between them are from 15 to 35 fathoms of water.

"The largest, and on which is the greatest danger, is the most southerly and westerly. It is somewhat triangular, with a long and narrow spit, making out from the S.E. angle. The S.E. point is in latitude 41° 34′, and longitude 67° 40′. The west point is in latitude 41° 42′, and longitude 67° 59′. The N.E. point is in latitude 41° 48′, and longitude 67° 47′. The eastern side of this shoal, although somewhat irregular, runs nearly S.S.E. and N.N.W., having on it from 3 feet to 9 fathoms at common low water. It is composed of a great number of sand pits, very narrow, so that the width of a narrow vessel will make several fathoms difference in the depth of water. The general range of the spits is from S.E. to N.W. As there are no rocks, they are consequently liable to change, in some measure, their position and ranges. On the eastern edge, even in calm weather, unless it be either high or low water, the tides run with great rapidity, and form considerable breakers, when setting to the westward, and a large waterfall when setting to the eastward. This is accounted for by a knowledge of the fact, that directly on the edge of this shoal there are from 12 to 16 fathoms water, so that the edge forms a sort of dam, stopping the force of the flood-tide, and over which the ebb falls.

"When there was any considerable wind, we observed that the breakers were higher within the edge to the westward, than on the edge; and I have no doubt (says Captain Isaac Hall) that the water there was still shoaler, and that we should have seen the sand had it not been for the heavy sea. The breakers were such, unless it was entirely calm, that it was impossible to go among them with boats; nor was it considered safe to attempt it with the vessels. For besides the danger of striking on the hard sand-spits, the vessels would have been liable to have been filled by the breakers. Even on the eastern edge, and at nearly slack water, the vessels were, at times, nearly covered with them; and it was therefore not thought necessary to attempt it, as the object of the survey, to ascertain if there was danger on the shoals, and the situation and extent of this danger, could be accomplished without the risk. Had not the sea been very smooth, and at high water, we should not have been able to have gotten on where we found only 3 feet, reducing it to low water. The prevailing wind was to the eastward; and I have no doubt that this place would have been bare, with any continuance of an off-

shore wind.* I think there are no rocks about the shoals. We had one cast on the S.W. side, which indicated rocky bottom, in 15 fathoms ; but I believe it to have been some sharp stone that the lead struck upon.

" The centre of the northern shoal is in latitude 41° 53′ 30″, and longitude 67° 43′. It extends east and west, about 4 miles ; the shoalest part, having 6 fathoms, is very narrow, and composed of hard sand ; but there are not more than 12 fathoms of water for 3 miles to the southward of the above latitude. On the north side, at 2 cables' length from the shoal, the sloop dropt into 33 fathoms. The breakers on this shoal are very heavy ; and when there should be a sufficient sea to endanger a vessel, they might be seen some miles, and heard at a considerable distance ; and as the shoalest part is not more than a cable's length inside, and no danger near it, a vessel might avoid it.

" To the eastward of the last-mentioned shoal, in latitude 41° 51′, and longitude 67° 26′, is another small shoal, with 8 fathoms water, having, however, considerable breakers. There are but 17 fathoms for 3 miles to the northward of it ; but very near to the eastward are 31 fathoms, and from 20 to 30 fathoms to the south and west.

" The centre of the east shoal is in latitude 41° 47′, and longitude 67° 19′. It is about 2 miles long from east to west, and has 7 fathoms water. To the southward there are but 17 fathoms for 2 miles ; but in other directions there are from 20 to 30 fathoms.

" The above shoals, I am confident, are all which are on St. George's Bank ; their positions and sizes may be relied on, as well as the soundings which I have laid down ; they were ascertained by a vast number of celestial observations, taken with good and well-adjusted instruments, on board the two vessels, and very carefully and faithfully calculated. The rates of the chronometers were found by a transit instrument previously to sailing from Boston, and after our return ; and all our observations recalculated for the small variation that appeared.

" At anchor, in different places, and on different days, we determined the set and strength of the tides, and, as nearly as possible, their rise and fall. The rise of them is from 1 to 1½ fathom. They set round the compass every tide, setting S.E. every full moon, and running from 1 to 4 knots per hour, at a mile's distance from the breakers. The mean rate is, however, materially varied by the winds. They set strongest at W.S.W. and E.N.E., and which is, undoubtedly, the strength of the flood and ebb. From these causes and variety in the tides, arises a principal danger in approaching the shoals. When under-way about the shoals, in a few hours' time we found ourselves drifted far out of our reckonings ; and to ascertain our situations, when both vessels were under-way, we took continued observations for the longitude by the chronometers, and, at the same time, double altitudes for the latitudes ; which latter were calculated by Brosius's new and certain method. By allowing for the set of tides, as ascertained at anchor, the observations and reckonings agreed very nearly ; so that the latitudes and longitudes of every place may be considered as certain. Should, therefore, any vessel fall in with these shoals, a knowledge of the course and strength of the tides will prove of the greatest importance ; and they can, by the preceding facts, be calculated for any day and hour.

" In proceeding from Cape Cod to the Shoals, at 15 miles from the light, there are 86 fathoms, muddy bottom. The water gradually deepens to 133 fathoms, and then decreases towards the shoals. In latitude 41° 51′, and longitude 68° 11′, there are 90 fathoms ; in latitude 41° 50′, and longitude 68° 3′, there are 49 fathoms, sand and gravel, on the western edge of the bank ; the water then shoals fast ; to the northward of the shoal, in latitude 41° 59′, and longitude 67° 52′, on the south side of the north channel, there are 60 fathoms, soft mud ; in latitude 42° 12′, and

* This tends to confirm the assertion made by the Cape Cod fishermen, that part of the shoal has been seen quite dry, with sea gulls sitting upon it.

longitude 67° 51′, there are 102 fathoms ; in latitude 42° 10′, and longitude 67° 18′, there is no ground at 175 fathoms. To the eastward we did not ascertain the extent of the bank. At 2 miles southward of the S.E. point of the shoals, there are from 20 to 26 fathoms, which soundings continue 20 miles to the southward and westward.

"The bottom on the bank, so far as we examined it, is of such a narrow character that it is difficult for a vessel to ascertain her situation by it ; we often found a great variety of soundings in a very short distance, such as sand of various colours, and differently mixed, coarse and fine gravel, pebbles of various colours, stone, sponge, and shells. Notwithstanding this variety, some general character of the soundings may be useful. The mariner, therefore, will find, to the westward of the shoals, and at some distance from them, the bottom to be coarse sand and gravel of all colours ; to the N.W., a mixture of white, black, and yellow sand ; to the north, black and white sand ; to the N.E., chiefly gravel and pebbles ; to the east, fine white and yellow sand ; and in latitude 41° 57′, and longitude 66° 40′, some white moss ; to the S.E., fine white and yellow sand ; and to the south, generally white sand.

"As the shoals are approached, in whatever direction, the soundings become coarse, and are frequently mixed with shells of different kinds. Near the shoal much of the bottom is pebbles ; and to the east of the largest and most dangerous shoal there are stones the size of hen's eggs, with moss and sponge on some of them.

"Near the S.E. point are from 15 to 20 fathoms ; a prevailing character of the soundings is green shells, chiefly of the species called sea-eggs. If a vessel be far enough south to avoid danger, she will have no shells.

"The reports that rocks have been discovered on these shoals are undoubtedly incorrect ; at the western part of the bank we saw, in strong tide rips, large quantities of kelp and sea-weeds, which, at a distance, had the appearance of rocks, but on sounding we found good water and a regular and clear bottom.

"It will be seen, by the bottom, that the holding-ground is not good ; but the vessels employed in the survey, by having a long scope of cable, frequently rode out a considerable gale of wind for 22 hours, on the east side of the main shoal, and also to the windward of it ; the sea breaking very high at the time, we being in 10 fathoms water.

"It may be worthy of remark, that at one cast of the lead, on examining the arming, I found one-third black sand, one-third white sand, and one-third green shells, in as distinct dimensions as they could be drawn."

Since this survey, in 1821, the shoal has been surveyed by Captain Charles Wilkes and others, in the United States brig "Porpoise," in the year 1837, and from this report the following is taken :—

"The shoalest water found on any part of the bank was $2\frac{1}{2}$ fathoms, or 15 feet, reduced to low water ; and this is only to be found in two small places, viz., in latitude 41° 40′ 13″, longitude 67° 44′ 10″, and latitude 41° 40′ 33″, longitude 67° 44′ 30″. The whole of the shoal is composed of hard sand pits ; fine sand on the shoalest places, and coarser as the water deepens, until it becomes large pebbles without sand.

"The rise and fall of tide is 7 feet, extremely regular, the first part of the flood setting N.N.W., the latter part N. by E. and ebb S.S.E. and S. by W. The flood runs $4\frac{1}{2}$ hours, the ebb $5\frac{1}{2}$ hours ; the greatest velocity $2\frac{6}{10}$ of a mile ; and $\frac{1}{2}$ an hour to 2 hours in changing, going round with the sun north by way of east. The wind has but little effect on the velocity. High water, full and change, at 10 hours 30 minutes.

"Clark's and Little George's Banks are proved by later examinations not to be accurately defined, and are but parts of the shoal ground of George's Bank.

"STELLWAGEN'S SHOAL GROUND.—Commander H. S. Stellwagen, U.S.N.,

by his soundings has shown the existence of this bank of over two thousand square miles, extending from George's Shoal to the westward, 25 miles; to the S.W., 50 miles; to the southward, 30 miles; its eastern limit being not yet defined, having on it as little as 9 fathoms water, in some places rocky bottom.

"NOTE.—In coming from the southward for George's Bank, you will get soundings in latitude 40° 4′, if on the S.S.W. part of the bank. Should you not get soundings in latitude 40° 30′, you may be certain you are to the eastward of the shoal, when you must direct your course accordingly to clear it, when your first soundings will be in 75 to 60 fathoms. When steering to the northward, you will shoal your water gradually to 20 fathoms, when you will be in latitude 41° 20′, which depth of water you will have 10 or 12 leagues distant, either east or west.

"Soundings from George's Bank continue W. by S., until you are nearly abreast of the east of Long Island, then southward to Cape Hatteras."—*American Coast Pilot.*

CAPE ANN TO CAPE COD, INCLUDING BOSTON BAY.

Variation about 11° W.

CAPE ANN, Lights.—Upon Thatcher's Island are two lighthouses 165½ feet above the sea; built of grey stone, while the lanterns and railings are painted red: they both exhibit fixed lights, visible 20 miles all round the horizon. The northern tower is in latitude 42° 38′ 19″, and longitude 70° 34′ 10″, the southern one bearing S. by W. ¾ W., distant 298 yards. A fog whistle station. From the north lighthouse the Londoner Rock bears S.E. by E., ½ a mile. As soon as the lights are discovered, you will be certain of your situation; for being two separate lights, they cannot be mistaken for the single light of Boston or that of Cape Cod, or for the Plymouth lights, which are double, and within a short distance from each other; whereas, the distance between the lights on Thatcher's Island is about ⅛ of a mile. Cape Ann is of moderate height, with trees upon it, and farther remarkable by Pigeon Hill appearing like a boat with the keel upwards. You will always go clear of the Londoner Rock by keeping 3 or 4 miles off; and in thick weather, or at night, signals from vessels will be answered by a whistle from the lighthouse.

STRAITSMOUTH ISLAND **Light.**—This island is 1½ mile to the northward of Thatcher's Island, and upon it a lighthouse is erected, being a white octagonal tower with black lantern, 24 feet in height, the light being 33 feet above the sea level. This lighthouse exhibits a fixed light, visible 11 miles, from N. 81° W. by the eastward to S. 22° W., and is a local light for Rockport and the channel inside the Salvages.

LONDONER LEDGE.—This ledge bears from the body of the island from E.S.E., extending about 2 miles from the island; it breaks at all times of tide, and is quite dry at low water. A long shoal runs off N.E., ½ a mile. After getting the west light to bear N. ½ W., you are to the westward of the ledge; then haul up to the N.W., to bring the lights to bear N.E. by E., and steer S.W. by W. for the Eastern Point, distant 5½ miles from Thatcher's Island; then the course is W. ¾ S., 5½ miles from the lights on Baker's Island.

Beacon.—On the Londoner Ledge is a wrought iron shaft, 40 feet high, surmounted by an octagonal lattice, or open work of cast iron, 7 feet high, and 5 feet in diameter, painted black. The following are the bearings from the beacon:—Dry Salvages, N. ¾ E.; Straitsmouth Island lighthouse N.N.W.; Northern lighthouse, Thatcher's Island, N.W. ¼ N.; Southern ditto, N.W. by W. ¾ W.; Eastern Point lighthouse S.W. by W. ½ W.

CAPE ANN HARBOUR.—In sailing from off Cape Ann lights to Cape Ann Harbour, you will open Braces Cove before coming up with the harbour ; which will when open bear N.N.W. This you must not mistake for Cape Ann Harbour, for the latter lies one mile further to the westward, and when open bears N.N.E.

Lights.—On Eastern Point, east side of Gloucester or Cape Ann Harbour, in latitude 42° 34′ 47″, and longitude 70° 39′ 33″, is a white brick tower, 33 feet in height, and 60 feet above the sea, exhibiting a fixed light, visible 13 miles. Fog bell station. Intended as a guide to Gloucester Harbour and also to vessels bound to Broad Sound or near Boston Light. A ledge extends ¼ of a mile to the southward and westward of the point.

On Ten Pound Island, within the harbour, in latitude 42° 36′ 5″, and longitude 70° 39′ 36″, is a lighthouse built of white stone, 25 feet in height and 50 feet above the sea, exhibiting a fixed light, visible 13 miles. A guide to the harbour.

When you come from the eastward and make Cape Ann Lights in the night, bring them to bear S.W., and run direct for them, which course will carry you within the Londoner ; and when you pass the said rocks, bring the two lights in one bearing N. by E. ¾ E., and steer S.S.W. ½ W. ; keeping this course about a mile, will carry you clear of Milk Island, which is very low, and cannot be seen on a dark night. When you judge yourself to the westward of this island, haul to the westward until you bring the lights to bear E.N.E., when you must steer W.S.W., about 5 miles, which course will carry you to the Eastern Point ; when you pass this point, keep on W.S.W., until you bring Norman's Woe, which is the highest land on the north side of the harbour, to bear N.N.W., and run in N.N.W., until you shut the lights in ; then N.N.E. will carry you safely in.

If you want to go inside the Salvages, keep close aboard Halibut Point, which has a tree on the eastern part of it, and steer S.S.E. for Straitsmouth Island lighthouse, but be careful to avoid Avery's Rock, by keeping Cape Ann Lights on the dry point of Straitsmouth Island till you get close aboard : then haul round the point, and S.S.E. will carry you to the Lights. To avoid the Londoner, keep the Lights close aboard the body of the island on which they stand.

The outer harbour of Cape Ann has good safe anchorage against a northerly or east wind, where you may anchor in 7½ to 6½ fathoms, low tides, muddy bottom, the lighthouse bearing S.E. by E., about 1 or 1½ mile. In the S.E. harbour there is also good safe anchorage, with north, east, and S.E. winds : anchor with the light bearing from N. by E. to N.N.W., in 6 or 7 fathoms, muddy bottom, distant from the Light ¼ to ½ a mile.

There are several shoals within and about the entrance of the harbour, so that it requires the aid of the large scale charts to take the harbour, or the assistance of a pilot is necessary.

Vessels approaching Cape Ann or Gloucester Harbour must beware of the Londoner Rock, already described. There is a channel to the westward ¼ of a mile wide, with 5 or 6 fathoms, but strangers should pass to the eastward, not approaching the lights on Thatcher's Island nearer than one mile until they bear N.W. With the lights in range bearing N. by E. ¾ E., 1 mile distant, steer S.W. by W. ½ W. 5 miles until Eastern Point light bears north, nearly. Haul round the point to the northward and westward, keeping ½ a mile off shore to clear Dog Bar and Eastern Point Ledge.

To enter S.E. Harbour bring Ten Pound Island light to bear N.N.E. ¼ E. and run for it, and when within ½ a mile of it, steer E.N.E. ½ E. to the anchorage in 5 or 6 fathoms, muddy bottom.

To enter Inner Harbour bring Ten Pound Island Light to bear N.E. and steer N.E. ½ N. leaving Round Rock Shoal and Ten Pound Island Ledge on the starboard hand. When the light bears E.S.E. distant 300 yards, steer N.E. by E. ¾ E. into Inner Harbour.

DANGERS.—Webber's Rock with 7 feet water on it lies S.W. by S. $\frac{1}{6}$ of a mile from the light on the Eastern Point.

Round Rock Shoal is in line with and half-way between Eastern Point and Muscle Point and has 12 feet water. On it is a spar buoy, No. 1.

Ten Pound Island Ledge is $\frac{1}{3}$ of a mile S.W. $\frac{3}{4}$ W. of Ten Pound Island light and has on it 7 feet water. On the western edge is a red spar buoy, No. 2.

Field's Rocks (or Fresh Water Cove Ledge,) are $\frac{1}{2}$ a mile west of Ten Pound Island and $\frac{1}{4}$ of a mile from the western shore. They are dry at low water and have near them a black spar buoy, No. 3, in 15 feet water.

Robson's Ledge is 200 yards south of Fort Point, at the entrance of the Inner Harbour, and has 8 feet water on it. On the S.S.E. edge is a black spar-buoy, No. 5, in 15 feet water.

Pinnacle Rock lies off a large wharf, 80 yards S.W. of Spindle Rock, and has on it 9 feet water. Black spar-buoy, No. 7, is placed close to this rock.

Harbour Rock and others not mentioned above are marked by iron beacons.

Bound for Gloucester Harbour, and falling into the westward, as far as Halfway Rock, on which there is a square granite beacon, painted black, take care not to bring the light on Ten Pound Island to bear to the eastward of N.E. by N. until you are a mile or $1\frac{1}{2}$ mile to the eastward of Halfway Rock, to avoid the S.E. Breakers that extend from Baker's Island, which bear from the lights on Baker's Island S.E. $\frac{1}{2}$ S. to S.E. $\frac{1}{2}$ E., about $2\frac{1}{4}$ miles distant. On the S.E. part of these breakers is placed a black spar-buoy, bearing from Halfway Rock N.E. by E. about a mile distant. When to the eastward of these breakers you may bring the light on Ten Pound Island to bear N.E., and run for it. On this course you will leave Ten Pound Island Ledge on your starboard hand, and the ledges of Norman's Woe Rock and Fresh Water Cove on your port hand. When up with Ten Pound Island steer as above directed.

Baker's Island lights bear from Eastern Point light W. by S. $\frac{1}{2}$ S., distant 6 miles ; S. point of Kettle Island W. $\frac{1}{2}$ S., distant 3 miles ; Halfway Rock S.W. by W., 6 miles ; lighthouse on Ten Pound Island N. $\frac{3}{4}$ E., $1\frac{1}{2}$ mile ; the red spar-buoy on the east end of Dog Bar W.N.W., $\frac{1}{6}$ of a mile.

Gloucester Canal, which connects the harbour with Squam River, passes immediately by the west part of the town, or what is called the Harbour Parish. It is about 120 rods in length, 30 feet wide, and has for its depth about the whole flow of the tide.

About 30 fathoms from Norman's Woe Point is a large high rock, called Norman's Woe Rock, of 20 to 30 fathoms diameter ; and about 100 fathoms off this rock, in a southerly direction, is a ledge that has 7 or 8 feet water on it at low tides.

SALEM HARBOUR.—**Lights.**—The entrance to Salem Harbour is distinguished by two lighthouses ; they are erected upon Baker's Island, which lies on the south side of the principal entrance of Salem Harbour ; this island is about $\frac{1}{3}$ of a mile in length from north to south, bearing east from Fort Pickering, distant about 5 miles from the town of Salem. These lighthouses are situate S.E. and N.W. of each other, distant 13 yards; coloured white with red lanterns, the S.E. tower being circular ; the N.W. octagonal. They both exhibit fixed lights visible 15 and 14 miles. One light is 64 feet and the other 87 feet high ; the southern light is the highest. The water near the island is deep, and there is no convenient landing-place. Its north and east sides are high and rocky.

On HOSPITAL POINT, north side of Salem Harbour Entrance, there is a fixed light, showing a light in the centre of the Main Ship Channel, lying between Baker's Island and Little Misery Island.

Fort Pickering.—On winter Island at entrance of harbour a red fixed light on the beach at mean low water.

Derby's Wharf.—Salem Harbour, a fixed red light.

Misery Island lies about a mile from Baker's Island, and is joined by a bar to Little Misery, which makes the north side of the channel opposite to Baker's Island. Misery Ledge, on which is a red spar buoy, has 8 feet least water, and bears from the lighthouses N.W. by W. $\frac{1}{2}$ W., $1\frac{1}{4}$ mile. The south part of Little Misery Island bears N.W. $\frac{1}{2}$ N. from the lights $\frac{3}{4}$ of a mile.

Half-way Rock.—**Beacon.**—This rock is 180 feet in diameter, 40 feet high, and bold-to, lying to the eastward of Marblehead, about $2\frac{1}{2}$ miles from the nearest land; it is half-way between the lighthouses of Boston and Thatcher's Island and is distinguished by a square granite beacon, painted black, the stonework of which is 15 feet high, with a base of 10 feet, and above the stonework a spindle 15 feet high, on which is a copper ball, 2 feet in diameter. On the S.E. part of S.E. Breakers is a black spar buoy, bearing from Half-way Rock N.E. by E., distant a mile.

Satan's or Black Rock is above water, steep-to, and bears S.W. by S. from Baker's Island, distant $1\frac{3}{4}$ mile, and Half-way Rock N.W. by W. $\frac{1}{4}$ W., $1\frac{1}{6}$ mile. On this rock is a red spar buoy, No. 10.

CAT ISLAND is about S.W. by W. from Baker's Island, 2 miles distant, and about a mile from Marblehead Neck, and ranges nearly between the two. The Marine Society has erected a spar on Cat Island, 40 feet high, to the top of which is annexed a cask, of about 130 gallons, which is a good sea mark, being seen at sea 20 to 30 feet above the land. A black spar-buoy lies off the S.E. end, bearing from the lights S.E. $\frac{1}{2}$ S. to S.S.E. $\frac{1}{2}$ E., $2\frac{1}{4}$ miles from the lights.

Bowditch's Ledge.—**Beacon.**—On the east end of this ledge is a triangular monument of granite, 32 feet high, placed in $2\frac{1}{2}$ fathoms; it bears from Baker's Island lighthouses W.N.W., $1\frac{1}{4}$ mile; the rock is seen at low spring-tides. Off the east side, in 15 feet water, is a black spar-buoy.

Eagle Island is about $1\frac{3}{4}$ mile from Peach's Point, and bears from the lighthouses W. by S. $\frac{1}{2}$ S., $1\frac{1}{2}$ mile. A bar runs off from the western point of the island, in a N.W. direction, $\frac{1}{2}$ a mile, and has a red spar-buoy on the east end of it. It may be avoided by keeping Gray's Rocks to the southward of Marblehead Fort.

Directions.—If bound to Salem, observe when you get abreast of Cape Ann, and bring the Cape lights to bear N.N.W., about 2 miles distant, to steer W.S.W. about 9 miles which will carry up with the eastern point of Cape Ann, then steer W. by S. $\frac{1}{2}$ S., $7\frac{1}{2}$ miles, which will carry up with the lights on Baker's Island.

If you fall in to the southward in proceeding for the lights on Baker's Island, you should, so soon as you have made them, bring and keep the northern or lower light open to the eastward of the southern, and run for them, which will carry you to the eastward, and clear of the south Breaker off Baker's Island, which bears from the lights S.E. by S., $2\frac{1}{4}$ miles distant, and is very dangerous.

Having made these lights, and the wind being westerly, when within $2\frac{1}{2}$ miles of them, be careful not to stand to the southward and westward so far as to shut the northern light within the southern one, on account of the south Breakers; nor to the northward farther than to bring the lights to bear W. by S. $\frac{1}{2}$ S., on account of Gale's Ledge, which bears from the lights N.E. by E. $\frac{1}{8}$ E., distant $1\frac{1}{3}$ mile Drawing near to the lights take care of the ledge called the Whale's Back on the east end of which is a red spar-buoy, No 6, and on the west end a red spar-buoy, No. 8, which bears from the lights N. by E., distant $\frac{4}{5}$ of a mile, and dries at a $\frac{1}{4}$ ebb.

In going into Salem by the common or ship channel, between Baker's Island

and Misery Island, which is about a mile wide, so soon as you are up with Baker's Island, pass within 100 fathoms of it, and steer W. by N. for the Haste (which is a broken rock above water), lying near the middle of the channel, bearing from Baker's Island lighthouse W. ½ N, distant 2½ miles, and 1¼ mile from the Salem Neck. This course will carry clear of Hard's Rocks, which are covered at high water, leaving them to the southward, and Bowditch's Ledge to the northward. If in the mid-passage between Baker's Island and the Misery Isles, steer W.N.W. till you have passed Bowditch's Ledge, or till Cat Island comes open to the westward of Eagle Island ; then haul up west for the Haste : you may there anchor in safety, in 5 fathoms, good ground ; but if you proceed into Salem Harbour, pass the Haste at about ½ a mile distant on your port hand, and steer S.W. by W., which will carry you into the harbour ; observe, there is a ledge of rocks runs off the N.E. end of Winter Island, and that Abbot's Rock lies abreast of it ; to avoid which, you must keep above ¼ of a mile from the shore.

Beacon.—Abbot's Rock has 7 feet water on it on a common ebb, and lies with Castle Hill and house into the cove north of Fort Pickering, and Beverley Meeting-house well in with Juniper Point (or S.E. point of Salem Neck). Be careful, in keeping off shore, to avoid Abbot's Rock, that you go not too far, and get on the Aqua Vitœ, which are sunken rocks, lying E.S.E. from Fort Pickering, distant nearly ½ a mile. On Abbot's Rock is a square granite monument, with a black top.

When coming from the southward, if you are near Cat Island, you may pass to the eastward or westward of it. If you are to the eastward, give a berth of ¼ of a mile, and steer N. by W. ½ W., or N.N.W., leaving the Brimbles and Eagle Island on the starboard, and Coney Island Ledge, on which there is a black spar-buoy on the port : that course will carry you clear of Eagle Island Bar. Continue on the same course till you have passed the Haste, and get into the common ship channel : or you may continue the same course until you get under the north shore, where there is good anchorage. If you are to the westward of Cat Island, you may pass in the middle channel between that island and Marblehead Rock, and steer over north for the ship channel, leaving Gray's Rock and Coney Island to the westward. When past the Haste, and entering the ship channel, proceed as before.

If in coming from the southward and eastward you should find yourself near Halfway Rock, you may bring it to bear S.E., and steer N.W. for the Haste, passing near to Satan's or Black Rock, leaving it on the port hand, and the Brimbles and Eagle Island on the starboard. The Brimbles are sunken rocks, which appear out of water at half-ebb, and are bare at low water ; near them is a spar-buoy, painted black. By continuing the above course you will leave the Haste on the port hand, and enter the common ship channel, as before directed. The tides here usually rise about 12 feet.

There are several other channels for entering Salem, but they ought, as is the case with the other harbours on this coast, never to be attempted without a pilot. Indeed coasting is dangerous to those not acquainted with the navigation of the locality.

BEVERLEY and MANCHESTER.—To enter the harbour of Beverley, follow the directions for Salem Harbour, till you bring the Haste to bear E.S.E. and run W.N.W., about 2 miles, and reach Beverley Bar ; this is a spot of sand running out from the southern or Salem side of the entrance, and has a black spar-buoy upon it. The bar has very shoal water on the eastern or outward side near it, but good anchorage within. There is good water at the head of the bar. Having passed the bar there is a sandy point from Beverley, or northern side of the entrance ; and beyond this point are the Lobster Rocks, on which is a square granite beacon, with a fish-shaped vane on the top, painted black, and which bears from the head of the bar west, a little south, less than ½ a mile distant, being above water at half-tide. To avoid this point after having well cleared the bar, you will steer towards

Ramhorn Rock, which has a square granite beacon, with red sugarloaf-shaped top, and is to be seen at half-tide, bearing S.W. by S. from the head of the bar, $\frac{1}{8}$ of a mile distant. There are several fathoms of water within a vessel's length of Ramhorn Rock. Giving this a good berth, you will clear the sandy point, and steer for the Lobster Rock beacon, bearing from Ramhorn beacon N.W. by W., distant about $\frac{1}{4}$ of a mile. Passing this at sufficient distance, you will be opposite to the wharves, and may anchor in deep water, in a very safe and excellent harbour.

To enter Manchester Harbour, you must bring the southern light on Baker's Island to bear S. $\frac{1}{2}$ E., and run north, a mile distant, where you may anchor on good bottom.

Eastern Point bears from Baker's Island lights E. by N. $\frac{1}{2}$ N., $7\frac{1}{2}$ miles distant; Half-way Rock bears from the lights S. $\frac{1}{4}$ E, 2 miles distant. Hardy's Rocks bear from the lights W. $\frac{3}{4}$ N., distant $\frac{3}{4}$ of a mile; on them is a black spar-buoy.

In thick weather a gun will be fired from the lighthouse, in answer to any signal which then may be made.

Marblehead Rock bears S.W., $\frac{3}{4}$ of a mile from the western part of Cat Island. It is above water, and may be approached to a short distance without danger.

MARBLEHEAD HARBOUR.—Vessels bound to Marblehead must observe the directions for Salem Harbour, until up with the lights on Baker's Island.

In going into Marblehead, and being up with the lights, give the north point of Baker's Island a berth of $\frac{1}{4}$ of a mile. Having the lights in a line, you will be up with the point. When the south light is open of the north light, you have passed the point, leaving Misery Island on your starboard hand, which bears from the lights N.W. $\frac{1}{2}$ N., $\frac{3}{4}$ of a mile; your course will then be S.W. by S. or S.S.W., until you bring the south light to bear N.E. by E. $\frac{1}{2}$ E., when steer S.W. by W. $\frac{1}{2}$ W., about 3 miles for Marblehead Harbour. Thus you will leave Hardy's Rocks, Eagle Island, and Gray's Rock, on the starboard hand; Pope's Head (which is a large high rock, bearing S.W. by W. from the lights, $\frac{2}{3}$ of a mile, on which is a black spar-buoy); the Brimbles, and the north point of Cat Island, on the port hand. The Brimbles bear from Eagle Island S.S.E. $\frac{1}{2}$ E., distant $\frac{1}{2}$ a mile; and Gray's Rock from the north point of Cat Island, N.W. by W., $\frac{7}{8}$ of a mile.

Marblehead Harbour Light.—Entrance to the harbour, S.E. side, in latitude 42° 30′ 18″, and longitude 70° 49′·42″, is a fixed light, elevated 43 feet, and visible 12 miles; building white.

The south entrance of the harbour of Marblehead is bold, and may be approached with safety with the light on the point of the neck, on the S.E. side of the harbour, bearing from N.N.W. to W. by N., until you are within $\frac{1}{2}$ a mile of it; then bring the light to bear W. by S., and run for it till within 2 cables' length; then steer N.W. by W. until the lighthouse bears S.S.W., then S.W., and anchor with the light bearing from E. by S. to N.E. by E., from $\frac{1}{4}$ to $\frac{1}{2}$ a mile distant, in 6 fathoms, good holding-ground and clear bottom, secure from all but easterly gales.

Vessels coming from the eastward, and running for Half-way Rock, must not bring the rock to bear to the southward of W.S.W., to avoid the South Breaker, which bears from Half-way Rock N.E. $\frac{1}{2}$ E. distant a mile. Being up with Half-way Rock, and bound to Marblehead, bring the rock to bear E. by S. $\frac{1}{2}$ S., and steer W. by N. $\frac{1}{2}$ N. for Fort Head, distant 3 miles, leaving Cat Island on the starboard hand, which bears from Half-way Rock W.N.W., distant $1\frac{3}{4}$ mile; and Marblehead Rock on the port hand, which bears from Half-way Rock, W. $\frac{3}{4}$ N., distant 2 miles. Black Rock bears from Half-way Rock N.W. by W., distant $1\frac{1}{2}$ mile. Cat Island Rock and Point Neck, on which is a red spar-buoy in 9 feet water, and a black iron spindle on the dry rock, bear east and west of each other, distant about a mile.

Vessels being well up in Boston Bay, may, by bringing the Boston light to bear

S.S.W., run N.N.E. for Marblehead Rock ; they are distant from each other about 12 miles. South Breaker and Boston light bear from each other S.W., and N.E., distant 15 miles.

Hardy's Rocks are covered at high water, and may be seen at a quarter-ebb. The Whale's Back is covered at high water, and may also be seen at a quarter-ebb. Gale's Rocks have but 4 feet water at low tide, and bear N.E. by E. $\frac{1}{8}$ E. from the lights, distant $1\frac{3}{4}$ mile. The South Breakers off Baker's Island are always covered. The Brimbles are covered at high water, and are seen at half-tide. Black Rock is always out of water, but low. Cat Island Rock, Half-way Rock, Marblehead Rock, Gray's Rock, and Pope's Head, are large, and high above water. Half-way Rock is very bold all round it. Eagle Island is bold only on the south and east ; from the N.E. part of it, quite to Hardy's Rocks, is very shoal water, and no passage for ships.

The Outer Breakers, generally called the Outer, Middle (on which latter is a black spar-buoy), and Inner Breakers, a very extensive and dangerous shoal, extending from Searle's Rocks in a S.E. direction, about 2 miles, and in a westerly direction about $\frac{3}{4}$ of a mile, bearing from the lights from S.E. $\frac{1}{2}$ S. to S.S.E. $\frac{1}{2}$ E., $2\frac{1}{4}$ miles. To pass to the eastward of this dangerous shoal, have the northern or low light a little open to the eastward of the high light.

A small part of Searle's Rocks (on which is a black spar-buoy), shows at low spring-tides, and bears from the South light S.E., $\frac{3}{8}$ of a mile distant, and from the S.E. point of Baker's Island S.E., distant about $\frac{1}{4}$ of a mile. There is a good channel between the island and Searle's Rocks, by keeping the island best on board, say at a distance of 30 or 40 fathoms. In this channel are 3 to 5 fathoms water at low common tides.

EGG ROCK, OFF NAHANT.—**Light.**—On this rock, in latitude 42° 25′ 58″, and longitude 70° 53′ 32″, is a square white building with tower, 87 feet above the level of the sea, which exhibits a red fixed light, visible 12 miles. Guide to Swampscot Harbour. It bears N.N.E. from Nahant Head.

BOSTON is the capital of Massachusets State and Suffolk County ; it is seated on a peninsula, and defended by a strong castle. The city proper is mostly built on the peninsula, and is 3 miles in length, by 1 in breadth, and connected with the mainland by a narrow isthmus. The quays are extensive, and there are several large suburbs—South Boston, Roxbury, Cambridge, Charlton, and East Boston. The buildings are mostly of deep red bricks, and the streets irregularly laid out. There is only one principal and safe channel into the harbour, which in some parts is very narrow ; but within, the harbour is very commodious and almost land-locked. Vessels of 22 feet draught can lie alongside the new wharves. It is high water, full and change, at Boston light at 11 hours 12 minutes ; at the United States Dry Dock, 11 hours 27 minutes. Mean rise of spring-tides 11 feet, neaps 8 feet ; variation, 11° west. The population of Boston is about 210,000, and several railways have their terminii here.

Lights in Boston Bay :—

1. The principal lighthouse of Boston Harbour is situate on Little Brewster Island, in latitude 42° 19′ 39″, and longitude 70° 53′ 5″. The building is circular, coloured white, with the lantern black. It is 111 feet above the level of the sea, showing a revolving light every half minute, visible 17 miles. An air trumpet giving blasts of 7 seconds at intervals of 43 seconds.

2. On the west end of the spit, which makes out from Great Brewster Island, abreast of the Narrows. This is an iron screw pile lighthouse of hexagonal form and dark brown colour. It is 46 feet above the sea, and exhibits a fixed red light, visible 10 miles. This light is a guide through the Narrows, and in one with Long Island Head Light leads clear of Harding's Ledge.

3. On Long Island (N.E. end), an iron lighthouse painted white, with black

lantern, 121 feet above the level of the sea, which exhibits a fixed light, visible 16 miles. A guide up to the roads in Boston Bay.

4. Minot Ledge.—On the outer Cohasset Rock, 7 miles S.E. ½ E. of Boston lighthouse, in latitude 42° 16′ 9″, and longitude 70° 45′ 14″, is a lighthouse, built of dark grey granite, 92 feet above the sea, which exhibits a fixed light, visible 16 miles. A bell struck by machinery.

STELLWAGEN BANK.—This extensive bank lies off Boston Harbour to the S.E., at the distance of 21 miles from the lighthouse, and to the north of Cape Cod. It is 17 miles in length from north to south, and 5 miles at its greatest breadth, and 2½ at the least. The least water on this bank is 10½ fathoms, which spot will be about 6½ miles north, 30½° west (true) from Race Point Light, Cape Cod. It lies generally outside of a line from Thatcher's Island to Cape Cod, with the exception of the spot of 10½ fathoms already noticed.

The direction of this bank is nearly N. by W. and S. by E.; the north end is in the latitude of Nahant, nearly, and the south end about 5 miles south of the latitude of Scituate Harbour, so that it lies directly in the approach to Boston Harbour from the southward, and affords a convenient depth for sounding while crossing it, there being no danger. It will thus prove serviceable to vessels in foggy or stormy weather, in enabling them to determine their position; and it should be observed, that from the 10½ fathoms north of Cape Race Light the bank deepens on the average but very slowly, reaching 13 fathoms at 9 and 11 miles; 14 fathoms at 13½ and 14 miles; and 14½ fathoms at 20 miles. It then deepens more rapidly to 20 fathoms, and then quite rapidly from this to 30 and 35 fathoms. The outer side of the bank slopes off gradually, and the inner quite abruptly, as a general rule.

By paying strict attention to the crossing of this bank, you may readily estimate your distance to the eastward of the coast, and the lead will give a good idea of the latitude, thus:—3 or 4 miles to the westward of the northern half of the shoal, the water deepens generally to 50 fathoms, while at the same distance inside of the southern half, the greatest depth of soundings diminishes gradually from 45 fathoms, in latitude 42° 15′ to 35 fathoms all the way across to the mainland.

Buoys.—On this bank the following buoys were laid down in 1858 to mark the approaches to Boston Harbour, viz.:—

1. A first class can-buoy, painted red, in about 11 fathoms water, N.W. by N. ¼ N. (true), 6 miles from Race Point lighthouse; and E.S.E. (true), 28¼ miles from Boston lighthouse.

2. A second class nun-buoy, painted with white and black perpendicular stripes, in about 15 fathoms water, E. ½ S. (true), 26½ miles from Boston lighthouse.

3. A first class can-buoy, painted black, in about 15 fathoms water, E. by N. (true). 21¾ miles from Boston lighthouse.

The above is from the official notice of the United States Lighthouse Board, but we are not certain if the buoys remain, as no notice is taken of them in the last edition of the American Coast Pilot (1867).

DANGERS IN APPROACHING BOSTON HARBOUR.

The Graves are a parcel of dry rocks, which appear white, lying to the northward and eastward of Boston light. On the N.E. ledge is an iron bell-boat, in 10 fathoms water, Long Island light bearing W.S.W. ½ W., 4¾ miles distant, and Boston light S.W. ½ S., 2¾ miles distant.

Thieves Ledge, of 4½ fathoms, lies E. ½ S. of Boston light, distant 3 miles.

Harding Ledge, on which a Day Beacon has been erected, at a point 3 feet above low water mark, bears from Boston lighthouse N.W., 2¼ miles; Martin's Ledge north, 2⅜ miles; Graves' Bell buoy north, 3⅞ miles; Davis' Ledge buoy S.E. ¾ E., 4⅞ miles; Minot's Ledge lighthouse S.E. ½ E., distant 4½ miles.

The top of the shaft is 31½ feet above the ledge, and bears a day-mark, which is a cast-iron ring or wheel, 4 feet in diameter, set horizontally, with twelve wooden pendants, attached to the rim. The shaft and Day-mark are painted black.

Martin's Ledge lies nearly midway between Thieves Ledge and the Graves, and has on it 13 feet at low water. Outside the ledge, in 6 fathoms, there is a red nun-buoy, No. 2, the Graves bell-boat bearing N. ¼ E., 1½ mile; Harding's bell-boat S. ¼ W., nearly 2½ miles, and Long Island light W. ¼ S., 4½ miles distant. Between the Outer Brewster and Martin's Ledge, on the last mentioned range, lies Tewkesbury Rock, with 9 feet on it at low-water.

N.W. nearly from Martin's Ledge, between Green Island and the Graves, is a ledge of sunken rocks, called the Roaring Bull, S.W. of which is a shoal spot of 10 feet, and N.E. is a spot of 18 feet water.

Barrel Rock lies N.W. by W. from the north part of Green Island, and has 4 feet on it at low water. Near it, in 21 feet water, is a can-buoy, with red and white horizontal stripes; Long Island light bearing S.W. by W. ¼ W., 2½ miles, and Deer Island Point beacon W.S.W. ¼ W., 2 miles distant.

Devil's Back.—West of Green Island, ½ a mile distant, is a ledge of rocks, called the Devil's Back, on the northern part of which is a black buoy, No. 1, in 18 feet water, the Barrel Rock buoy bearing N.W., ½ a mile, and Long Island light W.S.W., 2½ miles distant.

Half-tide Rocks.—E.N.E. ⅓ of a mile from the Devil's Back buoy, lies Maffit's Ledge, on which are 12 feet water; and S.S.E. ¼ E. of the same buoy, are the Half-tide Rocks, in Hypocrite Channel, near which is a red spar-buoy, No. 1.

Egg or Shag Rocks lie east of the north point of Little Brewster Island. The ledge is about ⅓ of a mile long, and runs N.E. and S.W., nearly. N.E. of the ledge about ½ a mile distant, is a shoal spot with 18 feet water, and about midway between the eastern points of Middle and Little Brewster Islands is another spot of the same depth.

Nash Rock, with 12 feet water upon it, lies on the northern side of the main ship channel ⅓ of mile S.W. of the western part of Little Brewster.

Kelly's Rock, with 15 feet water on it, lies to the westward of Nash's Rock about midway between it and George's Island, and is also in the main ship-channel.

Tower Rock lies off the S.W. extremity of Brewster Bar, in mid-channel. It has on it 17 feet water.

Black Rock is on Brewster Bar, in the north-eastern part of Black Rock Channel.

Ram Head.—A ledge of rocks, called Ram Head, makes off the northern part of Lovel's Island, on the northern part of which is a black can-buoy, No. 5. Long Island light bearing W.S.W. ½ W., 1½ mile distant.

Nix's Mate lies between Long Island and Lovel's Island, about ½ a mile from Long Island light. On it there is a square granite beacon with octagonal pyramid on top, painted black.

A black nun-buoy, No 9, has been placed on the north end of Nix's Mate, in 15 feet at low water.

Hospital Shoal.—Between Rainsford and George's Island is Hospital Shoal, on the northern part of which is placed a black nun-buoy, No. 1, in 18 feet at low-water. Long Island light bearing N.N.W. nearly 1¼ mile.

The Toddy Rocks lie E.S.E. ½ E. from the buoy on the Hospital Shoals ; near them is placed a black nun-buoy, No. 3.

Quarantine and Hangsman Rocks.—South of Rainsford Island are the Quarantine Rocks, and south of the Rocks lies Hangsman's Ledge, on which is a granite open-work beacon, with a small square cage on top. The rocks are dry at low water.

There is a rock with 12 feet water on it, bearing south 45½° west from Boston Light, distant 700 yards. The new beacon on the spit open to the north with the hotel on Long Island leads clear to the south of it.

Another rock, with 15 feet on it, bears south 75½° west from Boston Light, 770 yards distant, and from the new beacon on the spit south and east, distant 240 yards.

The hotel on Long Island shut in entirely with the north part of George's Island, leads clear to the south of it.

Another rock, with 17 feet, bears south 85¾° west from Boston Light, 2,343 yards distant, and from the old beacon on the spit south and S.W., 117 yards.

Nix's Mate, on the northern edge, or at the farthest the centre of Bunker Hill monument, leads clear to the south of it.

If Bunker Hill monument is not visible, keep Deer Island beacon on the north end of Apple Island, while passing the range of the old beacon spit on the little head of the Great Brewster.

Another rock bears E.N.E. from the Outer Brewster, distant ¼ of a mile, with 9 feet on it.

The outer ledge of 17 feet bears E.N.E. from Boston Light, 2 miles distant.

There is a red nun-buoy, No. 10, on Seventy-four Bar, in 15 feet at low water, about 20 fathoms west of the old wreck, which has but 9 feet on it at low tide.

The following bearings are given :—

Nix's Mate beacon, W. ¾ N. ; Nix's Mate buoy, N.W. by W. ¾ W. ; and Deer Island Point beacon, N.W.

Directions.—Approaching Boston Bay. Coming from the vicinity of Cape Cod, the direct course for Boston Lights, from off the Highland Light is N.W. by W. ½ W. Keep to the northward of this course if the wind is N.E., and to the westward if it is S.W., making allowance always for the tide. With a leading wind the direct course may be made good on the flood, but the ebb sets towards Minot's Ledge.

Minot's Ledge Light should not be approached nearer than ¾ of a mile by vessels coming from seaward, and those coming from the southward must give it a wide berth to avoid Davis Ledge. To clear this shoal bring Scituate Light tower to bear south and steer north until up with the bearing for entering the channel.

Coming from the vicinity of Cape Ann, if bound in by the main channel steer S.W. ¼ W. for Point Allerton until Boston Light bears W. ⅝ N., distant 1¼ mile, then steer W. ¾ S. and follow the directions for entering by this channel.

If bound for Broad Sound south channel, a S.W. by W. course leads clear of all dangers, and to the northward of the Graves. This course carries you through the middle of the south channel until you are past the buoy off Ram Head. When on this course, Long Island Light bears W. by S. ¾ S., and Deer Island beacon W. ¼ N., when you may steer W. by S. ½ S. for the extreme north-western point of Long Island, and follow the direction given for this channel.

From Nahant Head, if bound for main channel, steer S.S.E. to pass the Graves, which will give them a berth of ½ a mile ; and from the Graves S.S.W. until up with the bearing for entering the channel.

Beating in Boston Bay.—A vessel working up to Boston Harbour in the day may stretch safely anywhere from Minot's Ledge to Nahant Head, until up with the Graves on one side and the Hardings on the other.

The north-eastern part of the Graves must not be approached nearer than ½ a mile. At the Harding's it is safe to go close to the Bell Boat. Inside of the line from the Graves to the Hardings, vessels may stand to the southward to within ½ a mile of the shore, and to the northward to within ¾ of a mile of the eastern end of the Outer Brewster, or the eastern end of the Outer Brewster, or the eastern end of the Shag or Egg Rocks.

When up with the Egg Rocks you must stand no further to the northward than to bring Boston and Long Island light in range, and in passing Point Allerton be careful not to go inside the buoy. A vessel not having a pilot, even if a stranger, may beat up to the anchorage inside the lighthouse, in the day-time, by making short boards, and keeping 2 cables' length from Lighthouse Island, but should wait there for a commissioned pilot. If you are working up for Boston Harbour in the night, you will avoid the Cohassets and Harding's Ledge by not standing further to the southward than to bring Boston light to bear W.N.W. When within 2 miles of the light, go no nearer than to bring it to bear S.W. ½ W., and when near Egg Rocks you must not pass to the north of Boston and Long Island lights in range.

Main Ship Channel.—Coming from the southward, as soon as you make Boston light, bring it to bear N.W. by W. ½ W., and steer for it till you are past the Hardings and nearly up with Point Allerton. When this point bears S.W. by W. ½ W. a little over a mile distant, steer W. by N. ½ N. until Boston light bears N. ⅛ W., and then steer west for the southern end of George Island. Continue this course until Narrows light bears N.W. ¾ N., in range with Spit beacon, and you are abreast of the N.W. Centurion buoy. Now steer N.W. ½ W. for Nicks Mate beacon, which will appear a little open to the eastward of Bunker Hill Monument. Keep this course until you are up with the eastern end of Gallops Island, when you must steer N.W. by N. for the south-eastern point of Deer Island (having Nantasket Hill exactly over your stern.)

When Nicks Mate Beacon bears W. ¼ N., 500 yards off, steer N.W. for Deer Island beacon, which will be in range with the south-western point of Apple Island. On this range you will pass Nicks Mate buoy close to on the port hand. Continue your course until Long Island light bears W.S.W. when you may steer W. ½ N. into President Roads.

On this course you pass the Spectacles, and bring the House of Correction on Deer Island to bear N.E. by E. ¼ E. and the highest point of the North Spectacle S.E. by S. ½ S. and steer N.W. ½ N. (passing State Ledge on the starboard hand, and Castle Rocks on the port) until you are nearly up with the black buoy on the Upper Middle. You must now alter your course to the northward sufficiently to pass 75 yards to the eastward of this buoy ; and when abreast of it steer N.W. ¾ N., having the westernmost pier head in East Boston nearly ahead, the large brick building in the Navy Yards directly ahead, and Bunker Hill Monument just open to the westward of them. Catch this range, and keep it, which will enable you to make your course good in spite of tide. When Boston State House bears N.W. by W. ¾ W. steer N.W. by W. until it bears W. by N. ½ N., when you may anchor in 4½ fathoms off the southern part of the town.

Hypocrite Channel.—This channel enters between the Outer Brewster and the Roaring Bull Ledges ; thence it runs between Green and Little Calf Islands, and thence to Ram Head, where it enters the South Channel through Broad Sound.

Vessels intending to enter this channel, when in 13½ fathoms, must bring Boston light to bear W. by S. ¾ S. and Egg Rock light N.N.W., and steer W. ¼ N. for the southern end of Fort Independence on with the Blind Asylum. This course leads

midway between Green and Little Calf Islands, and leaves the Roaring Bull well to the northward.

When Little Calf Island bears S. by E., distant about 275 yards, and the red buoy on Half-tide Rocks is on your port bow, $\frac{1}{4}$ of a mile off, steer S.W. by W., leaving this buoy to the northward of you until Boston light is shut in with the Great Brewster, or until Deer Island beacon bears W. $\frac{1}{4}$ N., just clear of the southern end of Castle Island. Now steer W. $\frac{1}{2}$ N., leaving the buoy on the Aldridge's Ledge, 400 yards to the northward, and Ram Head buoy, 100 yards to the southward. When you have passed Ram Head you are in Broad Sound South Channel, and must proceed as directed for the passage.

Black Rock Channel leads from the Main Channel at the beacon on the spit into Hypocrite Channel, and is seldom used by large vessels except to avoid ice in the Narrows. It is narrow and unsafe for strangers.

To leave the Main Channel and pass through this passage when you are midway between the Narrows light and the southern end of Lovell's Island, and have the south-eastern angle of Fort Warren bearing S.W., steer N.E. with Green Island a little on your port bow. On this course you will pass about 30 yards to the eastward of Whiting's Ledge. But if the tide be flood, and you are not well acquainted with the locality of the ledge, keep to the eastern side of the channel as the flood sets across the channel to the westward.

If the tide be ebb, however, you may safely keep the N.E. course from the above bearings. When Little Calf Island bears S. by E., 300 yards off, you are in Hypocrite Channel and an east course carries you clear.

Broad Sound Channels.—Vessels intending to enter by the South Channel may come into the Sound anywhere between Nahant Head and the Graves, and steering to the southward of west until they bring Nick's Mate beacon to bear S.W. by W. $\frac{1}{4}$ W. may run for it. The range for this channel is Nick's Mate in the middle of the northern and highest of the Blue Hills. The channel is short and straight, its range is perfect, and vessels of the largest draught may resort to it with safety and convenience at $\frac{1}{2}$ or $\frac{3}{4}$ flood, especially in going out.

Vessels going out this way will leave Ram Head, Aldridge's Ledge, and Devil's Back buoys on the starboard hand, and Little Fawn, Great Fawn, and Barrel Rock buoys on the port hand, and in running out of Broad Sound will keep Egg Rock open with Nahant Head.

The North Channel passes nearer Deer Island, and is separated from the South Channel by a middle ground. The buoys are left in the same way as in the latter, except Barrel Rock buoy, which in going out is left on the starboard hand. The range for this channel is the north head of Long Island (on which the light stands) in line with the second bluff on the west side. It should not be attempted in bad weather, even by vessels of the lightest draught.

Back or Western Way.—This channel is used in light winds on the ebb, to escape being set out into the sound at Nick's Mate, or at the south-eastern end of Lovell's Island. When at the black buoy (No. 7) on Castle Rocks steer S.S.E. for Nut Island, keeping it in range with Quincy Great Hill behind it, and Castle Rock buoy as a stern range with the south eastern extremity of East Boston. This course will carry you down mid-channel clear of Thompson's Island Flats, Sculpin Ledge, and the shoals off Moon Island, with nothing less than 9 feet at mean low water. On this course, when you open Bass Point on a bearing of N.E. by E. $\frac{3}{4}$ E. steer S.E. for $\frac{1}{4}$ of a mile, for the southern hill on Peddock's Island, having Sunken Island beacon a little on your starboard bow. When the southern extremity of Long Island bears N. $\frac{1}{2}$ W., distant about 850 yards, and the western end of Gallop's Island bears N.E. by E., steer N.E. by E. until Long Island light bears north, when steer E. by S. for the south-western angle of Fort Warren. This course carries you past Rainsford Island Shoal and Wilson's Rock, both of which

must be left on the starboard hand, and leads to the anchorage in Nantasket Roads. When you are about $\frac{1}{3}$ of a mile from the fort steer S.E. $\frac{1}{2}$ E. for Nantasket Hill, passing to the southward of George's Island, and leaving Hospital Shoal to the westward of you. Continue this course until the Narrows light bears N.N.E., when steer E.N.E. for the S.E. Centurion buoy.

For Nantasket Roads.—Wishing to enter Nantasket Roads from outside, when Boston light bears north, distant $\frac{3}{8}$ of a mile, steer W. $\frac{1}{2}$ S. which brings up with the buoys on the Centurion. Leave these on the starboard hand, passing near them, and steer W.S.W., until Long Island light opens clear of the S.W. part of George's Island, and then haul up for the light and run in for the anchorage.

RANGES.

1. Long Island light, a little shut in on Point Allerton, or in the Outer Saddle, leads clear of the Hardings, to the southward of them.

2. When Long Island light is a little open to the eastward of the Graves, the passage is clear to the eastward of the N.E. Ledge.

3. The mark to go between the Graves and the Sunken Rocks, to clear the latter, is Boston light, a little off the Middle Brewster, between that and the Outer Brewster; and when Long Island light shows to the northward of Green Island, the vessel is clear of the Sunken Rocks to the north.

4. Keeping any part of the Graves open to the southward of Green Island clears the Half-tide Rocks.

5. To avoid the Rainsford Island Shoal, the high water mark on the south part of Moon Head, should be kept open with the high water mark on the north part of Rainsford Island until to the northward of the buoy.

6. Going the South Channel round Long Island, vessels should be careful not to shut Governor's Island in with Spectacle Island, in order to clear the reef between Spectacle and Long Islands.

7. Vessels wishing to stretch up between Long and Spectacle Islands must go to the eastward of the buoy and close to it. The range is to go no farther to the west than to open the East Head of Long Island, clear of the middle head, or in the night to see Long Island light just over the middle head. This clears the flats east the reef.

8. After leaving the anchorages off the city, when Moon Head opens clear of Fort Independence on Castle Island, vessels may run for Castle Island wharf, keeping it a little on the starboard bow.

9. From Castle Island wharf to President Roads a good range is a high steeple in the south part of the city on with the north line of Fort Independence.

10. To clear the Lower Middle in the night, the two lights should be kept about a ship's length open until to the east of Spectacle Island.

11. To pass through the channel to the north of the Lower Middle, the north end of Lovell's Island should be opened a little with the southern head of the Great Brewster, so as to show a gap between them.

12. Small vessels may go very near Bird Island Flats with safety, by keeping Long Island light open with the high part of Governor's Island. This answers for day and night. Large vessels can only follow this range at high water.

13. The beacon on the spit kept open to the north with the hotel on Long Island, leads clear to the south of Nash's Rocks.

Dangers.—The principal dangers in and about Boston Harbour, are the rocks and ledges near the shore, under the surface, and surrounded by deep water. Persons ignorant of the ground are cautioned not to approach them without a pilot. The following are particularly to be avoided :—

Outside.—Davis's Ledge, near the Minots ; Martin's Ledge and Tewksbury Rock, near the Outer Brewster, and Maffitt's Ledge, north of the Devil's Back, which are dangerous to vessels beating in Boston Bay and Broad Sound.

The rule is, first, not to go to the southward of Minot's Ledge light bearing west ; secondly, not to approach the Outer Brewster nearer than $\frac{3}{4}$ of a mile on the eastern side ; thirdly, keep to the westward of Maffitt's Ledge, giving it a good berth in passing Barrel Rock in the South Channel of Broad Sound.

Kelley's and Tower Rocks, in the Main Channel, have been removed. There is now a depth of 22 feet upon each of them.

REMARKS ON THE SET OF THE TIDAL CURRENTS.

1. Two miles east of Boston light the tidal current is weak. Between the light and Point Allerton the flood sets up channel, but the ebb coming from Nantasket Gut sets somewhat across the channel towards the spit ; care must be taken accordingly.

2. The flood sets strong through Black Rock Channel on to George's Island ; care must, therefore, be taken after passing the beacon on False Spit.

3. The ebb sets strong through the same channel, and vessels coming down from the Narrows (between Lovell's and Gallop's Islands) are in danger of being carried by it on Whiting's Ledge, or into the channel.

4. The flood setting between Gallop's and George's Islands may, in light winds, carry a vessel through when going up ; but here the channel way and anchorage are good.

5. In the north part of the Narrows, the flood, during a part of its period, sets to the southward, but is not strong. The ebb, which is stronger, sets to the northward, and it requires a smart-working vessel to beat down the Narrows against an ebb current.

6. Near Nick's Mate, the ebb will, in a light wind, carry vessels out through the Broad Sound Channels.

7. In the South Channel (Broad Sound) the ebb, after passing Ram Head, sets to the eastward. Vessels are liable to be carried by it on Alden's Ledge. North of this ledge it sets in the direction of the channel.

8. In the Hypocrite Channel the tidal currents of flood and ebb set in the direction of the channel.

Anchorages.—1. President Roads, south of a line from Nix's Mate to Castle Island, in sticky bottom.

2. Nantasket Road.—Nix's Mate just on with Gallop's Island, and Boston light shut well on to George's Island, give the best ship anchorage. Heavy vessels of war anchor farther south.

3. There is a convenient refuge for coasters in N.E winds under Spectacle Island

4. Vessels caught in bad weather near Nahant without a pilot, may anchor to the west of Nahant, in from 5 to 6 fathoms, by opening Lynn Harbour, and bringing the Hotel to bear E.N.E.

5. Vessels waiting for a pilot, may anchor in the Main Channel anywhere between the lighthouse and Nantasket Beach.

Vessels in Boston Bay, which bear away for Cape Cod Harbour, must endeavour to fall in with Race Point lighthouse, which shows a flashing light, and run for it till within $\frac{1}{2}$ a mile ; when it bears E.N.E., haul up E.S.E., or as near as the wind will permit, and anchor in from 10 to 4 fathoms, in Herring Cove, where there is good shelter with the wind from N.N.E. to S.E. by E. Should the wind shift to the N.W., Provincetown Harbour is under the lee : should you first make Cape Cod light, bring it to bear E. by N., and run for it till you have soundings in 14 or 15 fathoms ; then steer N.E. until the light bears E. by S.; then run in N.W. for the harbour.

Between Cape Ann and Cape Cod there are from 50 to 17 fathoms ; the latter $4\frac{1}{2}$ miles N. by E. from the Race light, with 55 fathoms inside. S.E. by E. $\frac{1}{4}$ E. from Boston light, to the Race light there is a ridge of rocks and sand of 7 to 23 fathoms water, with a small gully of 37 fathoms, 20 miles from Boston light. To the north of this ridge the bottom is generally muddy, and the depth from 40 to 50 fathoms.

It is high water, full and change, off Race Point, at 10 hours 45 minutes. Vessels leaving Cape Cod, bound to Boston, should calculate the tide, as the flood sets strongly to the S.W. off Cape Cod, from the Race to Chatham ; flood sets to the south, ebb to the north ; southern tide 9 hours, northern tide 3 hours.

THE COAST, CONTINUED.

SCITUATE.—About halfway between the harbours of Boston and Plymouth is the township of Scituate, having a small harbour. Cedar Point makes the North Chop of the harbour, the first cliff so called being the South Chop ; there are four of these cliffs extending towards the north, the southernmost being the highest.

From the northerly part of Cedar Point, a ledge called Long Ledge, extends N.N.W., nearly a mile ; so that vessels falling in little more than a mile to the northward, and making good their course north, will clear the outer ledges of Cohassets Rocks. Ledges extend from all the four cliffs, but there are none between them ; and by keeping at the distance of $\frac{1}{2}$ a mile from shore, all but the largest vessels will go clear of everything.

There is a passage within the Cohassets Rocks, but it is used only by coasters.

About 2 miles W. by N. from the point is a Meeting-house ; and near the N.W. side of the harbour is a farm-house, with two large barns a little to the northward. To enter the harbour, the mouth of which is nearly $\frac{1}{3}$ of a mile wide, bring the Meeting or the farm-house to bear about W. by N. from the middle of the entrance,

and run in on that direction for the farm-house, until you have passed the bar, which is a hard bed of stones and gravel, that does not shift; and after you have got over the bar and come upon sandy ground, haul up and anchor near the beach, on the south side of the harbour.

BRANT POINT.—Howland's Ledge, of 7 ft., has a black buoy, No. 3 on it. From it, Gurnet lights bear S. ¼ W., 4½ miles. Philip's Ledge is ¾ of a mile inshore of it, bearing W.N.W.

HIGH PINE LEDGE.—A black spar-buoy, No. 1, has been placed off High Pine Ledge, in 15 feet water. The rock is dry at low water. Gurnet Rocks, S. ¼ W.; Captain's Hill, W. ¾ S.; Brant Point, N. by W.

PLYMOUTH HARBOUR is to the southward of Boston light, 24 miles, and bears from Cape Cod W. ¼ S., distant 15 miles; it may be known by its two light-houses standing on a round hummock, called the Gurnet, on the northern side of the entrance, and on the southern side by a high double land, called the Manomet; this side is encumbered with many shoals, but the northern side is fair and safe with all but easterly winds; and should these blow hard, you may run into the harbour, and anchor within Brown's Island.

The harbour of Plymouth is capacious, but shallow, and formed by a long and narrow neck of land, called Salthouse Beach, extending southerly from Marshfield, and terminating at the Gurnet Head, and by a smaller beach within, running in an opposite direction, and connected with the main land near Eel River, about 3 miles from the town.

Lights.—On Gurnet Point are two lighthouses, in latitude 42° 0′ 10″, and longitude 70° 35′ 43″, situated N.W. and S.E., 10 yards apart. The buildings are of wood, painted white, each 34 feet in height, and 102 feet above the sea, exhibiting fixed lights, visible 10 miles.

These lights should not be brought in one when to the northward of them; but they serve as a range to clear Brown's Bank, coming from the southward and eastward, and as a guide into Plymouth Harbour, Kingston, and Duxberry.

At Duxberry there is a light exhibited from an iron tower, placed in 7 feet water, at mean tide near Duxberry pier. The tower is 47 feet in height, and 40 feet above the sea level, and exhibits a fixed red light, visible 11 miles. To be left to starboard in entering. There is also a beacon light at Plymouth, visible 3 miles.

GURNET ROCK, on which there are but 4 feet, lies S.E. by E. ½ E., full ¼ of a mile from the lights. On it is moored a red buoy, No. 2. The south side of the entrance to the channel is marked by a black buoy, No. 1, which bears from Gurnet lights S. by E. ¾ E., ¾ of a mile distant.

Approaching from the southward and bound to Plymouth, bring Gurnet lights in range, and run for them when within ½ a mile, with the tree on Saquish Head bearing west; steer W. by S. till the tree bears N. ¼ E., and Duxberry Pier W.N.W. ½ W.; then W. ½ N. till Duxberry Pier bears N.N.E. ½ E., and the pier head on Long Beach bears W.S.W. ½ W.

If bound into Plymouth steer S.W. ½ S., passing the pier head about 80 yards distant, and anchor when Gurnet lights are shut in behind Long Beach.

If bound into the Cow Yard from the last bearing, steer north for ½ a mile, passing to the port of Duxberry pier, giving it a berth of 100 yards, and anchor in 4½ fathoms.

In beating into Plymouth Harbour, do not stand into less than 3 fathoms on the northerly tack; on the southerly, the best guide is the rip, marking the edge of Brown's Shoal, which can be distinctly seen, except in very calm weather.

MARY ANN ROCKS lie off Manomet Point, which bears N.W. by W. ½ W., distant ¾ of a mile.

STELLWAGEN'S ROCK lies S.S.E., distant 1¾ mile from Manomet Point, and has but 6 feet on it.

In coming in from the northward for Plymouth at night, do not bring the lights more southerly than S. by W., to avoid High Pine Ledge, (which is marked by a buoy) and keep that course until you have them to bear N.W. or N.W. by W., when you will be clear of the ledge, and may steer up W. by S. until you have the lights to bear E.N.E., where you had best anchor for the night.

Should you make the Gurnet lights in the night, during hard northerly or N.W. winds, and cannot get into the harbour of Plymouth, you may run for that of Cape Cod, bringing the lights to bear W. by N., and steering for Race Point light, following the directions given for entering Province Town Harbour by the fixed light on Long Point, and come to anchor. If it should blow so hard that you cannot turn up the harbour, you may anchor off the point, on a clear bottom. You have 8 and 9 fathoms very near the shore, so that there is no danger of being on it, unless very dark.

CAPE COD is the northern part of the peninsula of Barnstaple. On the hook of the cape is Province Town, distinguished by its very useful harbour, which has depth of water for any ships.

Light.—On the extremity or north-westerly point of the peninsula, called Point Race, is a white light-house exhibiting a fixed light varied by flashes every 1½ minute, at 47 feet above the mean level of the sea, visible 11 miles; but it cannot be seen inward-bound until it bears S.S.W. ¼ W. A fog bell station, 300 feet N.N.E. from tower.

Cape Cod, Highlands Light.—A lighthouse is erected at the Clay Ponds, on Cape Cod, in latitude 42° 2′ 21″, and longitude 70° 3′ 18″. The house is erected on elevated land, which, with the elevation of the lantern, makes the whole height 195 feet above the sea. The light is fixed, and visible 20 miles. The building is white, and lantern black, it is distant 43 miles from Cape Ann Lights; 45 miles from Sankaty Head Light, and 41 miles from Boston Light.

If inward-bound to Boston, and you want to fall in with the back of Cape Cod, bring the light to bear S.W., 6 miles distant; then steer N.W. by W. ⅓ W. for Boston Lighthouse.

The lighthouse on the Race Point of Cape Cod stands in latitude 42° 3′ 42″, and longitude 70° 14′ 16″. It is, as already noticed, a flashing light, and is therefore readily known from the light on the highlands, called Cape Cod Highlands Light.

Cape Cod is low sandy land; but Race Point is very bold, and may be known by a number of fish-houses on it. From 1 to 3 miles to the southward of Race Point is what is called Herring Cove, where you have good anchorage ½ a mile from the shore, the wind being from E. to N.N.E. in 4 or even in 3 fathoms.

Lights.—A lighthouse has been recently erected at Wood End, near the entrance to Province Town Harbour. This lighthouse is built of brick and painted dark brown, 41 feet in height, and 45 feet above the sea, visible 11 miles. On the shoal off Long Point, at the S.W. entrance of Province Town Harbour, is a lighthouse containing a fixed light, 37 feet above the mean level of the sea, visible 11 miles. Building brown, on keeper's dwelling.

CAPE COD HARBOUR (Province Town) is one of the best harbours on this

coast. If making for Province Town Harbour, and being $\frac{3}{4}$ of a mile off shore, with Race Point Light bearing East, run S.S.E. until Cape Cod Light opens south of Long Point Light, or Wood End Light bears S.E. by E. $\frac{3}{4}$ E.; then run S.E. $\frac{1}{2}$ S. until Cape Cod Light opens south of Wood End Light, or Wood End Light bears E. $\frac{1}{2}$ N.; then run E. by N. until townhouse opens East of Long Point Light or Long Point Light bears N.N.W. $\frac{1}{2}$ W.; then run north until Wood End Light is in range with Long Point Light, or Long Point Light bears S.W. by W. $\frac{1}{2}$ W.; then W. by N., and anchor in from 8 to 4 fathoms, with Wood End Light bearing S.W. by S. $\frac{1}{4}$ S., and Long Point Light bears S.E. $\frac{3}{4}$ E.

When past Race Point Light, and running round towards Province Town Harbour, Cape Cod Light open south of Wood End Light, will carry clear of Wood End Bar.

From Wood End lighthouse, Race Point bears N.W. by N.; town house Province Town N. by E. $\frac{1}{2}$ E.; Long Point light N.E. by E. $\frac{1}{2}$ E.; Cape Cod light east; Billingsgate Island light E. by E. $\frac{3}{4}$ E.; Sandy Neck light S.S.W.; Plymouth lights W. $\frac{1}{2}$ N.; Minot's Ledge light N.W. $\frac{1}{2}$ W.

BILLINGSGATE ISLAND.—This island is small, and situate so far up Barnstable Bay, that it cannot be mistaken; it lies 14 miles S.S.E. $\frac{1}{4}$ S. from Race Point light. The island is 13 feet above the level of high water mark.

Lights.—On Billingsgate Island, at north side of entrance to Wellfleet, is a red square lighthouse, with lantern painted black, 52 feet above the sea, which exhibits a fixed light, visible 13 miles.

Mayo's Beach, at the head of Wellfleet Bay, is a harbour light. This is a brown tower erected on the keeper's dwelling, with black lantern. The light is fixed, elevated 36 feet above the sea, and visible 11 miles.

Billingsgate Shoal affords good shelter for vessels in northerly storms. The south-western extremity of this shoal bears from Billingsgate lighthouse W.S.W., $5\frac{1}{2}$ miles distant.

In making the anchorage give this shoal a berth, and bring the lighthouse on Billingsgate Island to bear N.E. by E. $\frac{1}{2}$ E., when you may stand up the channel E. by N. $\frac{3}{4}$ N., anchoring in 4 or 5 fathoms, sandy bottom, with the light bearing N.E. $\frac{3}{4}$ E., distant $2\frac{1}{2}$ miles.

In case of beating up this channel care must be taken not to approach too near the shoal as the soundings decrease suddenly. Good inner anchorage may be found in from 3 to 4 fathoms, soft bottom, about $1\frac{2}{3}$ mile S. $\frac{1}{4}$ W. of the lighthouse; but the approach to it should not be attempted by large vessels without a pilot. After rounding Cape Cod, with Race Point light bearing S.E. $\frac{3}{4}$ E., 2 miles distant, steer S. $\frac{1}{2}$ E. $17\frac{1}{2}$ miles, when Billingsgate light will bear N.E. by E. about $6\frac{1}{2}$ miles distant. You may steer between this bearing and E. by N. $\frac{1}{4}$ N., and anchor in 4 fathoms.

BARNSTABLE BAY.—From Centre Hill Point to Sauset Inlet the distance is about 4 miles, and the course S. $\frac{1}{2}$ E.; the shore is clean and bold, having from $3\frac{1}{2}$ to 4 fathoms, sandy bottom. A bar of sand lies parrallel with the shore, near Centre Hill Point, which extends to the southward, and terminates about $\frac{3}{4}$ of a mile to the northward of Sauset. From the shore over this bar to 3 fathoms water the distance is 240 to 250 fathoms, and the bar is from 100 to 140 fathoms wide, having over it 9, 10, and 11 feet; while between that and the shore are 3 and $3\frac{1}{2}$ fathoms. From the south end of the bar, along shore, to the entrance of Sandwich, are 3 fathoms, and the distances from 70 to 90 fathoms, sandy bottom, and regular soundings in approaching the land.

On the south side of Sauset Inlet is a low rocky point, of 90 fathoms. At $\frac{3}{4}$ of a mile off shore are 3 fathoms, and at the distance of $1\frac{1}{2}$ or 2 miles, 9 to 10 fathoms muddy ground. Passing from Sandwich to Barnstable, the flats run off shore 100 and 180 fathoms.

Barnstable Light is erected on Sandy Neck, at the west side of the entrance to Barnstable, and is a white building 44 feet in height and 59 feet above the sea, exhibiting a fixed light, visible 11 miles, a guide to Barnstable Harbour.

BARNSTABLE HARBOUR.—To enter this harbour when coming from the northward, you must not approach nearer to the bar than 5 fathoms water, until the lighthouse on Sandy Neck bears S.W. $\frac{1}{2}$ W., which will bring you up with the red spar buoy on the bar; haul round close to it, leaving it on your starboard hand, run 2 cables' length S.S.W., then steer S.W. by W. $\frac{1}{2}$ W., $1\frac{1}{2}$ mile, which will bring you up with the tongue of Yarmouth Flats, or until the light bears S.W. by S., then steer for the light. Be careful to make the above courses good, as the flood sets strong over Yarmouth Flats, and the ebb runs equally strong to the northward over the bar. Continue your course for the light, until within a cable's length of the beach, and follow the shore round the point. There is a safe anchorage inside, abreast of the light, with all winds; and the light bearing from S.W. to N.E., you will have from 5 to $2\frac{1}{2}$ fathoms.

Vessels drawing 8 feet water may, at high water, bring the light to bear S.W. $\frac{1}{2}$ W., and run directly for it. High water, full and change, at 11 hours. The tide rises 10 feet; and there are 7 feet on the bar at low water.

Tides in Massachusett's Bay. — Province Town, high water at 11 hours 22 minutes; springs rise 10 feet 8 inches, neaps 7 feet 7 inches: Billingsgate at 11 hours 5 minutes; springs rise 13 feet 3 inches, neaps 9 feet 4 inches: Plymouth at 10 hours 19 minutes; springs rise 11 feet 4 inches, neaps 9 feet.

CAPE COD TO NANTUCKET.

From Cape Cod Highland lighthouse the general tendency of the shore is south, about 25 miles, to Cape Malabar, or the sandy point of Chatham.

Cape Cod to Chatham.—From the highlands light to Nauset lights the course is S. by E., 12 miles, and thence to Chatham lights, S. ¾ W., 11½ miles; in all this extent the shore is sandy.

Nauset Beach Lights.—On Nauset Beach three lighthouses have been erected, 50 yards apart, north and south; the buildings are coloured white, with black lanterns, 20 feet in height, and 93 feet above the sea; each exhibits a single fixed light, visible 14 miles. Abreast of these lights the tides divide, and run in opposite directions.

CHATHAM HARBOUR is situate on the exterior extreme of Cape Cod peninsula, bounded east by the ocean, south by Vineyard Sound, west by Harwich, and north by Pleasant Bay. Its harbour is convenient to the fishery, in which numerous vessels are employed, and contains 20 feet at low water.

Chatham Lights are on James' Head. These are two circular towers, white-washed, with lanterns black, each 40 feet in height and 70 feet above the sea: they are situate north and south of each other, distant 70 feet apart, and exhibit fixed lights, visible 14 miles. Erected on the main, west side of Chatham Harbour, Nauset beach being on the east side.

From these lights the Pollock Rip light-vessel bears south, and the east end of the broken ground of Pollock Rip S. by E.

While passing Chatham in thick weather, approach no nearer than 5 fathoms, to cross the Pollock Rip; edge off and on from 5 to 7 fathoms, which will carry you over the Rip in 3 fathoms.

FINIS.

R. BARHAM, PRINTER, 11, CLOAK-LANE, CANNON-STREET, E.C.

SAILING DIRECTIONS

FOR

THE EAST COAST

OF

NORTH AMERICA,

FROM THE

PENINSULA OF CAPE COD

TO

PHILADELPHIA.

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N.B.—Alterations and additional information will be given in supplementary pages of ADDENDA, *as occasion may require; these corrections are also transferred at once to the Chart which this book is intended to accompany, so that it may sometimes happen the Chart has the latest information.*

ANY REMARKS OR COMMUNICATIONS FROM OUR NAUTICAL FRIENDS, FOR THE FUTURE IMPROVEMENT OF THIS, OR OTHER OF OUR WORKS, ARE RESPECTFULLY SOLICITED.

R. BARHAM, Printer, 1, Queenhithe, and 58, Upper Thames Street, London, E.C.

CONTENTS.

Page

From Nantucket Island to Philadelphia, including Long Island Sound ... 1

Description of Nantucket Island and Martha's Vineyard, with the Islands and Shoals adjacent 1

Directions for Vessels from Sea, when approaching the Coast between Block Island and Delaware Bay 12

Pilots 14

Tide Table for the Principal Points between Block Island and the Delaware 15

General Direction for Sailing from Newport, in Rhode Island, through Long Island Sound to Hunt's Harbour... 22

Directions for entering the Channels of New York Harbour 33

From New York to the River Delaware 34

Delaware Bay and River—Dangers outside the Capes 39

Dangers Inside the Capes—Light-vessels at the Entrance of the River—Light-houses at the Entrance 39

Buoys between the Capes of Delaware and at Entrance—Set of the Tides within the Capes 40

Sailing Directions to enter the Bay from the Eastward, through the Main Ship Channel 41

City of Philadelphia 42

INDEX.

	Page
Absecum Inlet	37
Barnegat Inlet	34
Bass River Light	4
Beaver Tail Light	9
Bishop and Clerks	4
Bird Island	5
Black Rock Harbour	18, 27
Block Island	8
Block Sound	20
Brandywine Shoal	40
Brant Point	4
Brenton Reef	9
Bridgeport	18, 27
Bristol Ferry Light	10
Buzzard's Bay	5
Cape Henlopen	39
Cape May Light	40
Cape Poge	4
Cerberus Shoal	20
Chatham Harbour	2
Clarks' Point	5
Conimicut Sand Spit	10
Connecticut River	17
Cross Rip Light	4
Delaware Bay and River	38
Dumpling Rock	5
Dutch Island Light	9
Edgartown Light	5
Fairweather Island	27
Faulkner Island	17
Fire Island Inlet	28
Five Fathom Bank	38
Gardiner's Bay	24
Gardiner's Island	16
Gedney's Channel	33
Goat Island Light	9
Great Egg Harbour	37
Greenport	16
Gulf Stream	12
Handkerchief Light-vessel	3
Hen and Chickens Light	5
Highlands of Navesink	31
Holmes Hole	5
Huntington Bay	19
Hyannis Light	4
Judith Point Light	9, 12
Lime Rock Light	9
Little Egg Harbour	35
Little Gull Island	16
Long Island (*South Side*)	28
Long Island Sound	15
M'Cries Shoal	38
Martha's Vineyard	2
Mattapoisett Harbour	6
Montauk Point Light	16
Mount Hope Bay	10
Mussle Bed Shoal	10
Nantucket Island	1, 3
Narragansett Bay	9, 11
Ned's Point Light	5
New Bedford	6
New Haven	18, 27
New London	17, 25
Newport	9, 10
New York Harbour and City	30
Nobsque Point Light	5
Norwalk Islands	18
Orient Harbour	16
Palmer's Island Light	5
Philadelphia City	42
Plum Island	16
Pollock Rip	2
Poplar Point Light	9
Port Jefferson Harbour	19
Providence	11
Prudence Island Light	10
Rose Island Light	9
Sag Harbour	16
Sandy Hook Light	30
Sankaty Head	3
Saybrook	17, 26
Shagwong Reef	20
Shinnicock Bay	28
Shovelful Light	3
Sippican Harbour	5
Sod Channel	35
South Channel—*New York*	33
Sow and Pigs Light	5
Stonington	16
Stratford Port	18
Succonnesset Shoal Light	4
Swash Channel, *New York*	33
Tarpaulin Cove	5
Tucker's Island	35
Vineyard Sound	3, 5
Warwick Light	10
Wings Neck	6
Wood's Hole Harbour	5

SAILING DIRECTIONS

FOR

THE COASTS, HARBOURS, AND ISLANDS

OF

NORTH AMERICA,

FROM

NANTUCKET ISLAND TO PHILADELPHIA.

NOTE.—In this work the Soundings are at LOW WATER, Spring-tides; the Bearings and Courses are Magnetic, or by Compass; and the Distances are in Nautical Miles of 60 to a Degree. A Cable's length equal to 100 fathoms. Longitude from Greenwich, Westerly.

FROM NANTUCKET ISLAND TO PHILADELPHIA, INCLUDING LONG ISLAND SOUND.*

Variation 10½° westerly off Nantucket; 7° off New York, decreasing to the westward to 4½° off the Capes of Delaware.

DESCRIPTION OF NANTUCKET ISLAND AND MARTHA'S VINEYARD; WITH THE ISLANDS AND SHOALS ADJACENT.—The extent here designated will comprehend the navigation between Monomoy Point in latitude 41° 33′ 33″ and longitude 69° 59′ 19″, on the E. and Buzzard's Bay on the W.; the southern boundaries of which are the islands of Nantucket, Tuckernuck, Muskeget, Chapquiddock, No-man's-land and Martha's Vineyard, an extent of full 42 miles; these being all connected, or nearly so, by numerous shoal grounds. The channel between these and the main, the eastern entrance to which is 8 or 9 miles broad, is also studded with various rips and shoals, which are scattered throughout, and render the navigation extremely difficult. Other shoals and dangers are situate to the E., S.E., and S. of Sankaty Head, on the outside of Nantucket Island, which will be noticed hereafter.

NANTUCKET ISLAND is about 14 miles in length; its two extreme points incline to the westward, and form a kind of bight between them. Between the W. end of

* CAUTIONARY WEATHER SIGNALS AS USED IN THE UNITED STATES SIGNAL SERVICE.—The cautionary signal of the Signal Service, is a red flag with black square in the centre by

Nantucket and the E. end of Martha's Vineyard, are the lesser Islands of Tuckernuck, Muskeget, and Chapquidock, all of which are surrounded with shoals. To the westward of Muskeget is a swashway of 2½ and 3 fathoms, leading to Cape Poge, the northern point of Chapquidock; and to the N.N.E. of Tuckernuck is a spit of sand, which runs out from the Island 6 miles; between Tuckernuck Shoal and Horseshoe a light-vessel is stationed.

MARTHA'S VINEYARD is about 18 miles in length from E. to W., and 8 miles N. and S., and like Nantucket, is a great nursery for seamen, and supplies pilots for the two Sounds, as well as all the ports in the vicinity.

SHOALS NEAR NANTUCKET ISLAND.—From Chatham Harbour the beach takes a S.W. by S. direction, 8 miles to Monomoy Point or Cape Malabar, which is the S. extremity of the peninsular of Cape Cod, and where a light-house is erected. Here commence the shoals of Nantucket, of which we do not consider it desirable to attempt a description, only observing that they are so numerous, as well as dangerous off this entrance to Vineyard Sound, and to the S.E. of Nantucket Island, that it is desirable the mariner should give this neighbourhood a good berth unless he has a good pilot on board, or is himself well acquainted with the coasting trade of the district, and with the numerous lights and marks by which the dangers are pointed out.

In endeavouring to assist the mariner we shall point out to his notice the description of the lights in this district, leaving the different service of each light to the knowledge of his pilot, or to his own acquaintance of the inshore navigation; suffice it here to say, a S.W. by S. course or bearing from the Chatham lights, will clear all the shoals to the S.E. of Nantucket Island, to the distance of 50 miles, when W. by S. ½ S., for 30 miles, will clear well to the southward of all the Fishing Rips and Davis S. Shoal, dropping occasionally on a 10 or 12 fathoms depth, and when the light-vessel off the Davis S. Shoal bears N. by W. he can haul up N.W. ½ W. for No-man's-land, near the western point of Martha's Vineyard. By this means the whole of the shoals will be avoided, and the navigation from thence becomes less intricate to the southward of Long Island, or through Long Island Sound.

Light-houses and Light-vessels from CHATHAM HARBOUR to the SOW AND PIGS light-vessel, at the S. point of BUZZARD'S BAY.

POLLOCK RIP light-vessel, off Chatham, 4 miles E. ½ S. from Monomoy light-house, in latitude 41° 32′ 7″ and longitude 69° 54′ 48″, painted red, a fixed light, 45 feet above the sea, visible 12 miles. A fog bell, horn, and gun. One red hoop iron day-mark at mast head with "Pollock Rip," painted in large white letters on each side. A north course from near this vessel, if made good, will take a vessel through the Slue in 3 fathoms at low tide. There is a buoy bearing

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day, and a red light by night: this signal displayed at the office of the observer, and other prominent places throughout any city, signifies:—

"1. That from the information had at the central office in Washington a probability of stormy or dangerous weather has been deduced for the port or place at which the cautionary signal is displayed, or in that vicinity.

"2. That the danger appears so great as to demand precaution on the part of navigators and others interested—such as an examination of vessels and other structures to be endangered by a storm: the inspection of crews, rigging, &c., and general preparation for rough weather.

"3. It calls for frequent examination of local barometer and other instruments by ship captains or others interested, and the study of local signs of the weather, as clouds, &c., &c. By this means those who are expert may often be confirmed as to the need of the precaution to which the cautionary signal calls attention, or may determine that the danger is over-estimated or past."

Orders to display cautionary signals will be issued from the office in Washington whenever they are considered necessary. These orders will be sent at such hours as the necessity of the case may demand, to the observers at any of the following stations:—Baltimore, Boston, Buffalo, Cape May, Charleston, Chicago, Cleveland, Detroit, Galveston, Grand Haven, Jacksonville, Key West, Milwaukee, Mobile, New London, New Orleans, New York, Norfolk, Oswego, Portland San Francisco, Savannah, Toledo, and Wilmington.

N. by E. from the light-vessel, distant half a mile, and a nun-buoy, painted in red and black horizontal stripes is placed upon a small shoal to the south of the broken part of the Pollock Rip, in 18 feet water, with the light-vessel bearing N.W. ½ N., Monomoy Point light N.W. by W.; Chatham Lights N. by W.

EAST ENTRANCE TO VINEYARD SOUND.—On Monomoy Point, or Cape Malabar, the S. extreme of Cape Cod peninsular, is a cast-iron tower painted red; lantern black. This light-house is 30 feet in height, and 41 feet above the level of the sea, exhibiting a fixed light visible between the bearings of N. 33° E. by the east to N. 13° E. from the light-house, at the distance of 12 miles. This light together with the Chatham lights serves to guide vessels in going through the North Channel, on the S. side of the cape, passing N. of the Handkerchief and Bishop and Clerk's. The light bearing N.W. by W. ½ W. will take a vessel in or out clear of Pollock Rip.

Shovelful light-vessel, off Chatham, 2½ miles S.S.W. ¾ W. from Monomoy Point, in latitude 41° 32′ 14″ and longitude 69° 59′ 15″, painted green, a fixed red light 40 feet above the sea, visible 12 miles. A fog bell, horn, day mark, &c., similar to the Pollock Rip. This vessel lies W. from Pollock Rip light-vessel, and has the name painted on her sides, similar to the other light-vessels of the United States. There is a red buoy near it, on the point of the Shovelful Shoal.

Handkerchief light-vessel off the southern part of the Handkerchief Shoal. This vessel is schooner-rigged and painted straw colour; it rides in latitude 41° 29′ 36″ and longitude 70° 3′ 20″, and shows a fixed light 40 feet above the sea, visible 12 miles. Fog bell, horn, and gun. "Handkerchief" painted on her sides two iron-hoop day-marks, one on each mast head, painted black.

NANTUCKET ISLAND.—On Sandy or Great Point, the N.E. point of the island, a light-house painted white, with black lantern, 60 feet in height, and 70 feet above the sea, in latitude 41° 23′ 22″ and longitude 70° 2′ 25″ exhibiting a fixed light, visible 14 miles, between S. 22° E. by the west to S 35° E. Good anchorage may be had inside this point, in easterly weather, in 7 and 8 fathoms water.

Sankaty Head.—S.E. part of Nantucket Island, about S. by W., 23 miles from Pollock Rip light-vessel, a light-house coloured white, red, and white, 65 feet, in height, and 150 feet above the level of the sea, exhibiting a fixed light, varied by a flash of 10 seconds' duration, once in every minute, and a fixed light during the remaining 50 seconds, within the range of visibility of the fixed light. The light is visible between the bearings of N. 74° W. by the east to S. 16° W. at the distance of 19 miles. Latitude 41° 16′ 59″ and longitude 69° 57′ 35″. Cape Cod light 47 miles, and Gay Head light 39 miles distant from this light.

Nantucket New South Shoals light-vessel, placed about 2 miles S. of the southern extremity of Davis's New South Shoal off Nantucket, in 14 fathoms water, latitude 40° 56′ 0″ and longitude 69° 51′ 30″, is schooner-rigged, painted red, and exhibits two fixed lights, one on each mast, elevated 44 feet above the sea, visible 12 miles each. This vessel has the words "Nantucket Shoals" painted in white letters on each side. By day she is distinguished by two iron hoops, one at each mast head, painted red; with a fog bell, and horn, and a gun fired during fogs. Bearings and distances—from the light-vessel to Old South Shoal, N. by E. distant 8 miles; Tom Never's Head N.N.W. ½ W., 21 miles; Block Island light W.N.W., 78 miles; and Sandy Hook light vessel (New York Harbour) W., distant 180 miles.

VINEYARD SOUND CONTINUED.—Gay Head, W. point of Martha's Vineyard, in latitude 41° 20′ 52″, and longitude 70° 49′ 47″, a light-house of red brick with black lantern, 41 feet in height, and 170 feet above the sea, exhibiting a flashing light every 10 seconds, and visible 20 miles between S. 32° E., by the west, to N. 86° E. This light is intended as a guide to Vineyard Sound and Buzzard's Bay, 39 miles from Sankaty Head light, 48 miles from Montauk Point light, and 30 miles from Point Judith. A rocky shoal distant 1½ mile lies N.W. from this light,

Cuttyhunk Island bears N. 45° W., distant 7½ miles; Vineyard Sound light-vessel distant about 7 miles.

Brant Point.—Entrance to Nantucket Harbour, in latitude 41° 17′ 27″, and longitude 70° 5′ 15″; a red light-house, 42 feet in height, and 46 feet above the sea, exhibiting a fixed light, visible 12 miles. This tower, in range with Nantucket beacon, will clear Black Flat, leaving the shoal on the starboard hand.

Nantucket Range Beacon.—On the rising ground, about a mile in the rear of Brant Point light-house, a white light-house, 6 feet in height, and 16 feet above the sea, showing a fixed light visible 5 miles; shown from a small wooden building in the rear of Brant Point, and on the south side of the harbour, to serve as a range with the main light.

Nantucket Cliff Range Beacons.—On the beach, N.W. of the harbour, two small fixed lights, 100 yards apart, N.W. and S.E., visible 4 miles each. The buildings are of wood, painted white, and the lights, 8 and 10 feet respectively above the sea. These are two small pyramidal structures N.W. by W. ½ W. from Brant Point light. The following are correct guides for entering the harbour of Nantucket:—Bring the Cliff beacon lights (red and white) in range and run for them, passing near the bell buoy in 3 fathoms water; keep on this course until up with the red buoy No. 2 on the outer bar; the course on this range is S.W. ½ S.; then steer for Brant Point light S. by E., passing the red buoys Nos. 4 and 6; then for Red Cliff beacon light S.W. by S. ½ S. until the rear beacon and Brant Point lights are in range; then steer on this range, passing the red buoys (outer, middle, and inner black flat buoys, Nos. 8, 10, and 12;) the course on this range will be S.E. by S. ¾ S., passing Brant Point within 100 fathoms, and then steer S.W. for the anchorage, in from 2 to 3 fathoms, soft bottom.

Bass River, N. side of Vineyard Sound, a white light-house erected on the keeper's dwelling, in latitude 41° 39′ 4″, and longitude 70° 9′ 50″ exhibiting a fixed light visible 12 miles between S. 73° E. by the west to S. 79° W. A guide to the anchorage inside the breakwater.

Bishop and Clerks.—On the N. side of the ledge, in latitude 41° 34′ 24″ and longitude 70° 14′ 40″, a grey light-house, 47 feet in height and 59 feet above the sea, exhibiting a revolving light every half minute, visible 13 miles. A fog bell sounded in dark weather. Point Gammon bears N. by W., 2¼ miles distant. The ledge extends 1¼ miles nearly N. and S.

Hyannis.—Harbour light, on the main, inside of the breakwater, in latitude 41° 38′ 9″ and longitude 70° 16′ 59″, is a white light-house, with black lantern, 21 feet in height, and 42 feet above the sea, exhibiting a fixed red light, visible 12 miles, between S. 18° E. by the west, to S. 70° W. Leading light for Hyannis Harbour of refuge, on the mainland, N. 5° E., from the E. end of the breakwater. Course in N.N.E. for the light.

Cross Rip light-vessel, N.W. of Nantucket, off Cross Rip Shoal, between that and Tuckanuck Shoal in 8 fathoms water, latitude 41° 26′ 44″ and longitude 70° 17′ 5″. This vessel is schooner-rigged, and painted black with white streak, and exhibits a fixed light, visible 12 miles. It is furnished with fog bell, horn and gun; with a white hoop-iron day mark at the mast head. A black buoy, 300 fathoms distant, bearing S.W. by S., lies in 18 feet water.

Cape Poge.—On Chapquidock Island, N.E. point of Martha's Vineyard, in latitude 41° 25′ 14″, and longitude 70° 26′ 44″, a white wooden light-house with black lantern, 36 feet in height, and 57 feet above the sea, bearing a fixed light, visible 13 miles between S. 86° W. by the west to S. 3° E.

Succonnesset Shoal light-vessel, in 6 fathoms, riding between that shoal and the Elridge shoal, in latitude 41° 32′ 0″ and longitude 70° 26′ 20″, is schooner-rigged, and painted in alternate red and cream-coloured squares, and exhibits a fixed light, visible 12 miles. The lantern is elevated about 40 feet above the sea. A fog bell, horn, and gun, with two red-hoops day-marks, moored in mid-channel in

6 fathoms water. Cape Poge light bears S. by W.; West Chop light W. by S.; Nobsque light W. ½ N.; buoy N.W., and Horse Shoe shoal E. ¾ S.

EDGARTOWN.—N. side, entrance to harbour, in latitude 41° 23′ 25″ and longitude 70° 29′ 51″ a white light-house on keeper's dwelling, with black lantern, 22 feet in height, and 37 feet above the sea, showing a fixed light, visible 12 miles.

HOLMES' HOLE.—On W. chop, western entrance to harbour, in latitude 41° 28′ 49″, and longitude 70° 35′ 49″, is a white light-house with black lantern, 36 feet in height, and 69 feet above the sea, showing a fixed light, visible 13 miles, between N. 72° W. by the east to S. 6° E. A guide through the Sound and to Holmes' Hole harbour. On E. chop is a fixed red light.

NOBSQUE POINT.—E.S.E. entrance to Wood's Hole harbour, in latitude 41° 30′ 55″ and longitude 70° 38′ 59″ a white light-house with black lantern, 29 feet in height, and 83 feet above the sea, exhibiting a fixed light visible 15 miles. A fog bell. Leading mark in running through Vineyard Sound.

TARPAULIN COVE.—W. side of the Cove, on Naushon Island, in latitude 41° 28′ 6″, and longitude 70° 45′ 8″, a white light-house with black lantern, 32 feet in height, and 80 feet above the sea; a fixed light, varied by flashes every 30 seconds, visible 15 miles, between N. 62° E. by the east to S. 46° W. This light is seen from Gay Head, and bears N.E. by N.

VINEYARD SOUND LIGHT-VESSEL.—This vessel is moored near the Sow and Pigs Rocks, in latitude 41° 23′ and longitude 70° 58′ 40″ in 13½ fathoms, is schooner-rigged, and painted red, with yellow streak; she exhibits two fixed lights at 34 feet above the sea, which are visible 11 miles. A fog-bell and horn. "Vineyard Sound" painted on her sides, and two balls colour of the vessel, one at each mast head. Cuttyhunk light N.E. ¼ E.; Gay Head E.S.E.; Dumpling Rock N.N.E. ¼ E. A dangerous rock lies on the range between the vessel and Dumpling light, called Ribbon Reef, marked by a red and white horizontal striped buoy.

HEN AND CHICKENS LIGHT-VESSEL.—About half a mile S.E. of the Hen and Chickens Reef, in latitude 41° 27′ 0″ and longitude 71° 0″ 45′, painted lead colour, with iron-hoop day mark at each masthead, and moored in 10 fathoms water; she is furnished with bell and horn, and exhibits one fixed light, visible 11 miles.

BUZZARD'S BAY.—CUTTYHUNK, S.W. point of island in latitude 41° 24′ 50″ and longitude 70° 56′ 39″, a white wooden light-house with black lantern, 32 feet in height, and 42 ft. above the sea, exhibiting a fixed light visible 12 miles. In entering Buzzard's Bay bring the light to bear E., distant 3 miles, and then steer N.E. by E.

DUMPLING ROCK.—Off Round Hill, S.S.W. of Clark's Point light and New Bedford, in latitude 41° 32′ 16″ and longitude 70° 54′ 58″, a white light-house, with black lantern, 33 feet in height, and 42 feet above the sea; exhibiting a fixed light visible 12 miles. On keeper's dwelling. Clark's Point light bears N.N.E.

CLARK'S POINT.—W. side of entrance to New Bedford Harbour in latitude 41° 35′ 32″ and longitude 70° 53′ 43″, a white light-house, 59 feet in height and 68 feet above the sea, showing a fixed light visible 13 miles, between N. 14° E. by the east to N. 75° W. This light is erected on the fort adjacent to former sight. Cuttyhunk light bears S. 20° W., distant 11 miles.

PALMER'S ISLAND.—On N.E. extremity of the Island in New Bedford Harbour, in latitude 41° 37′ 35″ and longitnde 70° 54′ 13″, a white light-house with black lantern, 34 feet in height, and 38 feet above the sea, exhibiting a fixed light, visible 12 miles, between S. 49° E., by the west to S. 5° E.

NED'S POINT.—E. side of Mattapoisett Harbour, E. of New Bedford, in latitude 41° 39′ 1″ and longitude 70° 47′ 25″, a white light-house with black lantern, 32 feet in height, and 43 feet above the sea, exhibiting a fixed light, visible 12 miles, between S. 53° E. by the west to S. 15° W. A guide to Mattapoisett Harbour.

BIRD ISLAND.—E. side of entrance to Sippican Harbour, in latitude 41° 40′ 8″, and

longitude 70° 42′ 43″, a white light-house with black lantern, 31 feet in height, and 37 feet above the sea, exhibiting a fixed light varied by a flash every minute and a half, visible 11 miles, between N. 15° E. by the E. to N. 27° W., 10 miles. A guide to Wareham and up the bay.

WING'S NECK.—Head of Buzzard's Bay, in Sandwich, in latitude 41° 40′ 47″, and longitude 70° 39′ 20″, a white light-house with black lantern, 29 feet in height, and 44 feet above the sea, showing a fixed light, visible 12 miles. On keeper's dwelling. A guide to the head of Buzzard's Bay.

BUZZARD'S BAY.—NEW BEDFORD.—The best way to New Bedford, even for vessel's from the westward, is through Quick's Hole; this channel is formed between two of the Elizabeth Islands, named Nashawena and Pasque, that is, the second and third of the larger islands. New Bedford Harbour is on the western side of Buzzard's Bay; and Clark's Point, the western point of its entrance, is distinguished by a light-house already noticed.

The entrance to New Bedford Harbour is obstructed by several ledges, which are dangerous to touch upon, and are mostly pointed out by buoys, and the several channels are marked by the lights and beacons; but as the harbour ought not to be taken without a pilot, we shall not attempt an account of them, especially as the marks may be occasionally altered and re-arranged.

Vessels bound to New Bedford should endeavour to bring the light-house on Gay Head to bear S. ¾ W., and steer N. ¾ E, until they come to the channel, named Quick's Hole. Be careful when entering, to avoid the spit which extends from the port shore. Sail in as near mid-channel as possible; or keep the starboard hand most on board, when you will have from 5 to 6 fathoms; then haul straight into the Hole, keeping the port hand best on board, following the bend of the shore. Keep Gay Head light open about a ship's length by the S.E. point of Nashawena, until at least a mile N. of the Hole, which will carry to the eastward of a ledge of rocks that lies that distance from it, with only 5 to 12 feet on the heads, and marked by a buoy, to the westward of which is a good channel and 5 fathoms all round; then steer N. ½ W. till you strike hard bottom, in 5 fathoms, on the S.E. corner of the Great Ledge, which is on the western side of the channel to New Bedford Harbour.

On the western side, in Quick's Hole, is a sandy cove, having good anchorage, with 3 and 4 fathoms; and about 3 leagues E.N.E. from the entrance to Quick's Hole, is Wood's Hole, at the E. end of the islands, and forming another good channel between Naushon Island and the main.

Bird Island is on the northern shore of Buzzard's Bay, and near the E. side of Sippican or Sippigan harbour, in the township of Rochester, and about 10 miles E.N.E. from Clark's Point light-house. The island is small, and does not contain above 3 acres of land, elevated about 5 feet above the level of the sea. There are several buoys placed in Buzzard's Bay; but as these are mostly taken up in winter, and may be occasionally altered and shifted, we cannot give a fair account of them; especially would it be needless, seeing that it is entirely in pilots' water. The following bearings and distances are from Bird's Island light-house:—South Point of West Island S.W. ¼ S., distant 7 miles; West Island ledge black buoy S.W. ¾ S., 7½ miles; the N. entrance of Quick's Hole S.W. by S., 14 miles; Wood's Hole S., 9 miles; and the entrance to Monument River E.N.E. ½ N., distant 6 miles.

MATTAPOISETT is a fine harbour, easy of access, situate on the N. side of Buzzard's Bay. On the E. side of Mattapoisett Harbour, about a mile S.E. of the village, is Ned's Point, on which a light-house is erected.

HEN AND CHICKENS.—This is a dangerous reef, extending S. by E., 1½ mile from Gooseberry Neck. On the outermost rock, called the Old Cock is a spindle; and a light-vessel is moored off the shoals as noticed in p. 5.

The soundings across the western entrance of Buzzard's Bay, between the Sow and Pigs and the Hen and Chickens, and to some distance within, are very irregular, varying from 5 to 10 and 15 fathoms, the bottom mostly hard. A S.E. moon makes H.W. in the bay ; and the average rate of the stream is about 1½ mile an hour.

In entering Buzzard's Bay from the westward, you may bring Cuttyhunk light to bear E., 3 miles distant ; and then steer N.E. ½ N., which course will carry a vessel to good anchorage, in 6½ to 7 fathoms, about a mile from the Dumpling Rock light, with it bearing N.N.E. or N.E. by N. This is as far as a stranger should venture without a pilot, who can always be had by making a signal.

H.W. at the Dumpling light-house, 7h. 59m. ; rise 4 feet. A fog bell.

Most mariners that are well acquainted with Buzzard's Bay, frequent the western channel, giving the Old Cock and Chickens a good berth ; the only danger to be avoided is Wilkes' Ledge, off Mishaum Point, which bears W.S.W. ½ W. from it, distant 1¾ mile, over which are only 2 fathoms water ; and the ledge to the southward of the point, on which are 3 fathoms with common ebbs. Having rounded Mishaum Point, steer directly for the Dumpling light-house, passing at about 2 cables' length of it.

If coming from Road Island to Buzzard's Bay, you will have to round Seaconset Point, off which are several rocks ; these require a berth of at least a mile, and the course will be E. ½ S. ; make good this course and the Hen and Chickens rocks will be avoided. The soundings will generally be from 16 to 9 and 8 fathoms, mostly hard ground to where the light-vessel of the Hen and Chickens bears north ; Cuttyhunk light-house S.E. ¾ E., 3 miles, and you may then steer N.E. for the Dumpling light-house, giving it a sufficient berth ; or stand on that course until you get into 7 fathoms soft ground, which will be between Mishaum and Round Hill Point, then anchor.

Should it happen when you have stood well in from Seaconset Point, towards Cuttyhunk, that the light on Dumpling, or that on Clark's Point cannot be seen, but Gay Head light is visible ; then stand E. ½ S. until you shut it in behind the W. end of Cuttyhunk ; then you must immediately change course to N.N.E. Should neither light be discovered, your soundings will be your only guide, and these must be particularly attended to.

Directions for sailing into New Bedford.—Round Hill Channel.—Running in from the southward and westward, bring Mishaum Point to bear W. by S. and White Rock a ship's length open to the eastward of Dumpling light, and steer to the N.N.E., leaving the red-can buoy, No. 4, on Sand Spit, on the starboard hand, and the black-spar-buoy off Dumpling Rock on the port hand, and keeping the rock open as you advance, so as to pass a quarter of a mile to the eastward of the light.

When the light bears W. by N. steer N.E. ½ N., 2¼ miles, leaving the red and black buoys on Middle Ledge and Innez Rock on your port hand, until Clark's Point light is in range with Palmer's Island light ; then steer for the beacon on Egg Island flats N.N.E., nearly two miles, leaving the black buoy on Old Bartlemy on your port hand, until Palmer's Island light is in range with the tall chimney of Wamsutta factory. Steer for them, passing the black buoys on Butler's Flats and Eleven Feet Bank on your port, and the red buoys on Egg Island Flat and Fort Flat on your starboard hand, until up with the southern end of Palmer's Island, then steer for the ends of Fairhaven wharves, passing a red buoy on the N. end of Fort Flat on your starboard hand, until you are half way between them and Palmer's Island light ; then steer for the most northern spire in New Bedford, and anchor near the town.

N.B.—Wamsutta factory is a large stone building with a very tall chimney on its eastern side ; it is in the northern part of the town, and may be seen over Fairhaven Bridge.

Channel between North and Great Ledges.—To take this channel the light on Clark's Point, in its new position, must be brought about N. ½ E. when you may steer for it until within 1¼ mile, then steer for the beacon on Egg Island Flats, and proceed as above directed. On the above course you will pass a black buoy on the eastern part of Great Ledge on your port hand, and a red buoy on Decaturs Rock on your starboard hand.

For the Eastern Channel.—Bring the white beacon on the Fort Point in range with the high dark spire in Fairhaven, and steer for them, until Palmer's Island light and the tall chimney before mentioned are in range, then steer as above directed. On the above course you will pass Hursell Rock and Packet Rock red buoys, and Henrietta Rock striped buoy on your starboard hand, and the black buoy on North Ledge on your port hand.

BLOCK ISLAND.—Mariners approaching the shores of America from the Atlantic, and bound to Nantucket, Rhode Island, Long Island, or New York, will readily perceive that their proper track will be between the shoal grounds of George's Bank and Nantucket Shoals on one side, and the Gulf Stream on the other; and that it will not be prudent to go to the northward of 40° 40′ N. when approaching the southern shoals of Nantucket. The presence of the Gulf Stream may always be readily ascertained, it being invariably warmer than the temperature of the oceanic waters, the difference frequently amounting to 10 and 12 degrees, while in winter the amount is much greater. By this it will readily be known when the stream has been passed, and when you are advancing within the vicinity of land. It must also be remembered, when approaching the shoals of Nantucket, the streams of tide run rapidly, but yet regularly, to the N.E. and S.W. Approaching the shoals to the southward, in 30 or 25 fathoms, the bottom is of fine black-and-white sand; while to the eastward, at a similar depth, the ground will be coarse sand, shells, and gravel. Near the shoal the water appears very light coloured, the bottom being black-and-white sand, with pieces of green shells. At 9 leagues to the westward of the shoals, in between 30 and 40 fathoms, there will be black mud, of a smooth and shining quality, a sure indication of the Tuckernuck Channel. Coming in to the land between Block Island and Martha's Vineyard, you will, in the parallel of 40° 15′ and longitude 71°, have 70 fathoms, mud and oaze, which quality of sounding will continue until the depth decreases to 25 fathoms. When Block Island bears N., distant 5 or 6 leagues, you will not see the land either to the northward or to the eastward, but advancing nearer, will most probably discover Montauk Point light-house; the land on which it stands making in a long low point.

Block Island N. Point Light.—East Entrance to Long Island Sound. On N. point of the island, in latitude 41° 13′ 46″, and longitude 71° 34′ 17″, a grey light-house 50 feet in height, and 65 feet above the sea, exhibiting a fixed light, visible 14 miles between S. 32° W. by the north to S. 39° E. This light is intended to guide vessels clear of the low sandpoint extending from the N. end of the island, the entire horizon is illuminated, but the arc included between the bearings (going round by S.) of E. 35° S. to S. 25° W. (true), will be hidden by the island.

From the point extending seaward, in nearly a N. ¾ E. direction, is a shoal, making it dangerous to pass with a vessel within 2 miles of the light. From this shoal, Montauk Point light-house bears S.W. by W. ½ W.; and Judith Point light-house N.E. ¾ N.; Watch Hill light-house W.N.W.; Clay Head (Block Island) S.E. by E.; Rocks off Clay Head, S.E. by E. ½ E.; and the S.W. part of Block Island S.S.W. ¾ W.

Vessels making Block Island from the southward, or S. and westward, may give it a berth of a good mile on its E. and W. sides. Point Judith light bears from the S.E. light on Block Island N.N.E., 13 miles.

S.E. Point Light.—On the S.E. point of Block Island is a fixed white light, visible 21 miles. Position, latitude 41° 9′ 0″ N., longitude 71° 33′ 0″ W. Fog-signal S.E. of the light-house.

In approaching the S. side of Block Island from the southward, the water shoals gradually. When the island bears from N.W. to N. by W. the bottom is mud; this is commonly called Block Island Channel. This island appears high and round as you come from the southward; and if from the S.E. it is like a saddle, low in the middle, and high at each end, though highest to the southward. Your course from Block Island to Gay Head is nearly E. by N., and the distance 11 leagues.

The charts will be the best guide for the soundings. To the southward of No-Man's-land, there is coarse sand, like gravel stones, in 20 and 25 fathoms; and S.S.W. from it in 28 or 30 fathoms, coarse red sand. S.S.E. from Block Island, in what is termed Block Island Channel, are 30 and 40 fathoms, with oazy bottom; but shoaling the water to 25 or 20 fathoms, you will find coarse sand.

The following **Lights** are exhibited in the neighbourhood of NEWPORT :—

BLOCK ISLAND already noticed.

POINT JUDITH.—On the S. extremity of Narragansett shore, in latitude 41° 21′ 38″, and longitude 71° 28′ 34″, a white light-house, 46 feet in height, and 67 feet above the sea, exhibiting a revolving light every 15 seconds, visible 14 miles between S. 86° W. by the south to N. 34° E. A trumpet sounding 4 seconds at intervals of 28 seconds.

BRENTON REEF LIGHT VESSEL.—Off Brenton Reef and the eastern entrance to Newport. A light-vessel is moored in 13 fathoms. This vessel is painted of a straw colour, with the words "Brenton's Reef" on each side in black letters, and is furnished with a fog bell and horn; she exhibits 2 fixed lights, 40 and 50 feet respectively above the sea, which are visible about 12 miles. Point Judith light bears S.W. ¼ W.; and Beaver Tail W. by N. ½ N.

BEAVER TAIL.—S. point of Conanicut Island, entrance to Newport Harbour, a square granite light-house, painted white on the S.E. angle of Keeper's dwelling, 74 feet in height, and 96 feet above the sea, in latitude 41° 26′ 56″, and longitude 71° 23′ 39″, exhibiting a fixed light, visible 16 miles, between N. 5° E. by the east to N. 37° 30′ E. A trumpet sounding at intervals of 24 seconds, and an Anderson's fog-horn for use in case of accident to trumpet.

GOAT ISLAND, NEWPORT HARBOUR.—N. end of island, on the end of breakwater, attached to keeper's dwelling, both whitewashed, a light-house, in latitude 41° 29′ 34″, and longitude 71° 19′ 18″, exhibiting a fixed light 33 feet above the sea, visible 11 miles. The building being 29 feet in height. To guide through the north entrance to the harbour.

LIME ROCK.—S. side of S. entrance to Newport Harbour, a white light-house, 13 feet in height, and 30 feet above the sea, exhibiting a fixed light, visible 11 miles between west, by the north to east. Erected on the N W. corner of keeper's dwelling. To guide vessels through the S. entrance. There is bold water off the Lime Rocks, but a long spit from the S. end of Goat Island.

ROSE ISLAND.—On the southernmost point of Rose Island, a light-house erected on the keeper's dwelling, one story high, with Mansard roof, on which is the tower, surmounted by a lantern painted black. The building is of wood, painted a drab colour, the trimmings being brown. It exhibits a fixed red light 50 ft. above the sea, visible 6 miles between north, by the west, to east. Intended to guide through the East Channel up the bay and to Newport Harbour.

NARRAGANSETT BAY.—DUTCH ISLAND.—On the southern point of the island in latitude 41° 29′ 41″, and longitude, 71° 23′ 58″, a square brick tower, coloured white, attached to the keeper's house, 35 feet in height, and 56 feet above the sea, exhibiting a fixed light visible 13 miles, between N. 13° E. by the south to 107° East. Intended to guide through West Channel of Narragansett Bay and to Dutch Island Harbour.

POPLAR POINT, near Wickford, in latitude 41° 34′ 14″, and longitude 71° 26′ 2″, a white light-house 33 feet in height, on the keeper's dwelling, and 51 feet above the

sea, showing a fixed light, visible 13 miles, between N. 61° E. by the east to S. 4° 30′ E. To guide through the West Channel up the bay, and to Wickford.

Prudence Island.—Sandy Point, E. side of the island, in latitude 41° 36′ 19″, and longitude, 71° 17′ 54″, a white light-house, 25 feet in height, and 30 feet above the sea, showing a fixed light, visible 11 miles, between N. 16° E. by the east to S. 43° 30′ W. An octagonal stone tower, whitewashed, and intended to guide through East Channel and to Fall River.

Bristol Ferry.—On Bristol Ferry Point, N. side of entrance to Mount Hope Bay, in latitude 41° 38′ 33″, and longitude 71° 15′ 10″, a square white light-house on keeper's dwelling, 28 feet in height, and 54 feet above the sea ; exhibiting a fixed light, visible 11 miles, between N. 46° E. by the east to S. 79° 30′ W. A guide to Fall River.

Muscle Bed Shoals.—A fixed red light is shown from the beacon on the S.E. side of the Channel, Bristol Ferry. Fog bell.

Warwick.—S. extremity of Neck, in latitude 41° 39′ 59″, and longitude 71° 22′ 22″, a white light-house, on S. end of keeper's dwelling, 28 ft. in height, and 54 feet above the sea, showing a fixed light, visible 13 miles, between N. 34° E. by the east to N. 66° W., situate at the head of the W. Channel, and can be seen after passing Dutch Island, or Goat Island lights.

Conimicut Sand Spit.—West side of entrance to Providence River, a grey granite round tower, 50 feet in height, and 50 feet above the sea, showing a fixed light, visible 13 miles, between N. 20° E. by the east to S. 49° W. May be approached to within 20 yards. In addition to the above lights, there is a fixed light exhibited on the Pumham Rock. The building is 69 feet above the sea, with black lantern, erected on the keeper's dwelling and illuminating 180° of the circle. Also on the Fuller's Rock and Sassafras Point, fixed white lights are exhibited each illuminating an arc 180°. They are placed in portable beacons, painted white, surmounting granite piers, and are 25 feet above low water mark.

NEWPORT HARBOUR.—Directions.—If bound to Newport Harbour, you must steer from Gay Head light-house towards Conimicut light-house about W.N.W. ¼ W. the distance being 8½ leagues. If the wind be scant, and the tide at flood, you will do well to keep a good look out, to avoid the Sow and Pigs off which a light vessel is moored ; to do this you must hold your own, and having passed which, you will be exposed to the indraught of Buzzard's Bay, and be drawn towards the Hen and Chickens, and to avoid which a light-vessel has lately been placed thereon to point out the extent of the danger.

Conimicut light-house stands on the S. end of Conimicut Island, called the Beaver Tail ; and Brenton's Ledge extends nearly three quarters of a mile from the S. end of Rhode Island, between which is the entrance into Newport Harbour. From the S.E. part of Block Island to Beaver Tail light-house, the course is N.N.E. ½ E., and the distance 6 leagues; about Midway between them are 10 to 11 fathoms of water. If you fall in on the W. side of Block Island, with the body of the island bearing E.N.E., and have the depth of 9 or 10 fathoms, your course will be N.N.E. for about 7 miles, until Point Judith light bears N.E. by E. when steer towards and round it, N.E. by N. for Beaver Tail. Point Judith appears like a horse's head, and is bold : between Block Island and the point are from 25 to 6 fathoms water. In proceeding for Newport Harbour, Beaver Tail light-house is to be left on the port hand ; give it a berth to avoid the Newton Rock, which lies due S. from it, about 200 yards. Care must also be taken to avoid the Brenton's Ledge, on the starboard side of entrance (off which a light-vessel is moored) and other rocks which lie S. from Castle Hill, some of which appear above water, and extend nearly three-quarters of a mile to the S.S.W. ; there are also other rocks on the same side, which must be guarded against. Upon the western side, off the Fort Port, about 3 miles from the light-house, are some rocks above water ; they are called the Dumplings, from which the town of Newport bears E.

Goat Island lies directly before the town, and has both a fort and a light-house,

upon it; a shoal runs out from each end of the island, having a buoy placed at ach ext remity.

In sailing in from the eastward, to clear Brenton's Reef, you must bring the Beaver-tail light to bear N.W. by W., or keep to the southward of the light-vessel; run towards the light-house until the light at Goat Island bears N.E. ¾ E.; steer on for this light until you get it to bear E. or E.S.E., at the same time keeping the beaver tail light S.W. by W. ½ W., in 7 to 9 fathoms, good ground.

In coming from the W. after passing point Judith, steer N.E. by N. until you draw up with Beaver Tail light, to which giving a berth, run on for Goat Island light, and anchor. Brenton point, with the S. end of Goat Island, form the southern passage into Newport. Your course up the harbour will be about N.E. ¾ E. in mid-channel, for 3 miles, leaving the Dumplings on the port side; then E. and E. by S. to the anchorage before Newport. Care must be taken to avoid the rocks near Castle Point, on your starboard side, some of which are above water.

The best anchorage is nearer to Goat Island than to Rhode Island, as the other parts of the harbour are grassy, which frequently chokes the anchors. Rhode Island is navigable all round, by keeping in the middle of the channel. It is H.W. at Newport at 7h. 45m. Spring-tides rise 6 feet, neaps 3 to 4 feet.

NARRAGANSETT BAY lies between Conimicut Island and the main. The course in is about N. by E., taking care to avoid the Whale Rock; you may pass it on either side and anchor where you think most convenient.

The Town of Providence is situate about 20 miles to the northward of Newport, and about 7½ leagues from the sea, being the head navigation of Narragansett Bay. Ships which draw from 15 to 18 feet of water, may sail up and down the channel, which is marked out by stakes, pyramids, and spindles erected at the points of shoals and banks lying in the river. The commerce and manufactures of Providence are very extensive; and it has railways to Boston and Stonington.

Advancing farther up Narragansett Bay, you will pass Dutch Island between Conimicut Island and the main, and 4 miles farther the bay expands, and you will have Hope Island, a small island about a mile from the northern end of Conimicut Island and Prudence Island, the latter a narrow and irregularly formed island, on the starboard side; and the towns of Wickford and Greenwich, in openings on the port.

Prudence Island has a shoal stretching along its western side, with some small islets upon it; this must be given a berth to, and passed in 5 and 4 fathoms, mid-channel; at the northern end of the island is a spar-buoy off Providence Point; the channel then turns to the N.-eastward; and here, upon a narrow point of land, called Warwick Neck, is the harbour light; Poplar Point light near Wickford, and Warwick Neck light are to be left on the port hand if bound to Providence; but if going to Greenwich, you will leave Warwick Neck light on your starboard, and the spar-buoy off Long Point on the port: this buoy lies about 1½ mile from the light-house; and the opening leading to Greenwich is 1½ mile wide. The passage toward Providence is between Prudence Island and Warwick Neck, within which are 3 fathoms.

To the N.-eastward of Prudence Island is Warren and Bristol; and to the northward of Rhode Island is a branch of the river running into Mount Hope Bay and Taunton River.

Beacons and Buoys at Newport Harbour.—A spindle on Saddle Rock, eastward of Rose Island, on either side of which there is a passage.

A spindle with a ball, on a rock at the S. end of Rose Island, which you leave to the northward.

One on red buoy with a cross, on Dyer's Reef S. part of Coster's Harbour, which you leave on your starboard hand.

Another red buoy is placed on the ledge of the Bishop's Rock, called the Triangle Rock, on either side of which you may pass, giving the buoy a berth.

One black spar-buoy at the S., and another at the N. end of the Gull Rocks, both of which you pass to the eastward.

A spar-buoy off Providence Point, which is the N. end of Prudence Island, to the northward of which is the main channel.

A spindle on the Halfway Rock, which you pass on either side.

POINT JUDITH bears S.W. $\frac{1}{2}$ S., and is distant 2 leagues from Beaver Tail light-house. Upon it a stone edifice has been erected, exhibiting a revolving light to distinguish it from the Beaver Tail and other lights in its vicinity.

It may also be readily known from that on the Watch Hill, which is fixed.

DIRECTIONS FOR VESSELS FROM SEA.

When approaching the Coast between Block Island and Delaware Bay.—

From the U.S. Coast Survey.

The GULF STREAM, by its high temperature, gives the first warning of an approach to the coast in latitude 38½°; it is nearly 360 nautical miles from the land, measuring on a parallel of latitude. After passing through it the temperature begins to fall; there is also a fall of temperature in striking soundings, which shows the time to use the deep-sea lead.

The colour of the water changes with the depth; from 150 to 50 fathoms it changes from dark blue to light blue, and from 50 to 30 fathoms and less from a light blue to a light green.

SOUNDINGS.—Up to the 20 fathoms curve or line they follow the general form of the shore, and between 80 and 100 fathoms the water suddenly deepens. The 20 fathom line is 31 miles from Cape May, in an E. by S. direction, but less than 7 miles from Montauk Point. A depth of 20 fathoms off the E. point of Long Island is therefore too near the land, unless with a commanding wind; while 20 fathoms off Cape May is at a safe distance from the shore.

The latitude of a ship's place is usually better known than the longitude, but the latter is most important on approaching this coast, and can be determined approximately from the latitude, in connexion with the distance, curves, or lines of depth.

East of the entrance to the Delaware, the bottom, in 100 fathoms, is mostly dark grey sand mixed with broken shells. To the N. of this parallel it is mostly green and blue mud mixed with sand.

Eastward of Delaware Bay, the bottom, between 100 and 40 fathoms, is most frequently sand and broken shells; inside of 40 fathoms, grey or yellow sand with black specks. North of this parallel the bottom is as often mud as sand, the mud being more frequent going to the N.E. until off Block Island, where the bottom from 100 to 20 fathoms is mostly green mud or oaze, known as the Block Island soundings. Green mud or oaze cannot be found within 15 miles of Block Island, and seldom to the W. of the meridian of Montauk Point in less than 30 fathoms, water.

Between 40 and 20 fathoms off the coast of Long Island and New Jersey, the character of the bottom changes so often between these depths, that constant reference must be made to the descriptions on the chart.

In general the water shoals regularly and more or less gradually, from 100 or 80 fathoms to the shore, but there are some remarkable exceptions.

The 5 fathom bank so called, off the Delaware has but 13 feet on it. A light-vessel is stationed 3 miles to the S.W. of this bank, which vessels from sea will leave on the starboard hand when bound into Delaware Bay, and on the port hand when bound to the northward. In an E.S.E. ¾ S. direction from Barnegat Inlet, the 20 fathoms curve or line extends as far out as 45 miles.

There are other banks from 2 to 4 miles of 5½ fathoms, N.N.W., and also N.E. 3 miles of this 13 feet bank, least water on the latter 3½ fathoms; another S. by W. ¼ W., 3 miles of 4 fathoms, and another directly 4 miles eastward of Townsend inlet, with 4 fathoms.

THE MUD-HOLES.—The distinguishing mark for New York Bay is a series of mud-holes extending in a S.E. direction from Sandy Hook, and forming a very remarkable gorge. These holes are designated on the charts by their depths. Beginning with the three largest ones, and distinguishing them by their depth of water, viz. :—

The 37 fathom Mud-Hole, with 22 fathoms outside, 28 miles distant from Sandy Hook, and bearing S.E. ¾ S. ; its length is 8 miles and width 1½ mile. This is the mud-hole commonly known to navigators. To the southward and eastward of this, 39 miles from Sandy Hook, and bearing S.E. ¼ S., is—

The 2nd 37 fathom Mud-Hole, with 27 fathoms outside in a N.E. direction, but only 21 fathoms in a southerly direction ; its length E. and W. is 5 miles. To the eastward of this is—

The 38 fathom Hole, with 25 and 29 fathoms outside. This is the largest one, its length being 8½ miles from N. to S., its width 2½ miles. It bears from Sandy Hook S.E., distant 50 miles. To the southward, eastward, and south-eastward of this there are three others, the 35, 50, and 145 fathoms holes, distant from Sandy Hook respectively, 63, 74, and 89 miles, and bearing S.E. by S., E.S.E. ½ S. and S.E. ½ E. ; the first one has 27 fathoms outside, the second 35 and 38, and the most remarkable one 63 fathoms. Nearer to Sandy Hook and of less importance, are—

The 23, 21, and 32 fathom Holes, at distances of 11, 12½, and 17½ miles ; and with 16, 13, and 17 fathoms outside. The least distance from Sandy Hook, where a line of 100 fathoms will find bottom, in a direction passing over these mud-holes, is 100 miles.

VESSELS BOUND TO NEW YORK.—*From the eastward.*—Striking soundings in more than 35 fathoms, green mud, steer direct for Sandy Hook, making Navesink or the light-vessel. Striking soundings in less than 30 fathoms, green mud, steer to the northward of W., shoaling the water very gradually on that course. If beating against a westerly wind, in the night or thick weather, do not stand into less than 18 fathoms on the northwardly tack, till nearly up with Fire Island Inlet. The chart shows that, after passing inside of 25 fathoms, the soundings decrease very slowly going W., and very rapidly going N. or on Long Island shore ; this distinction should be carefully borne in mind.

Note.—If vessels from the E., bound to New York, fall in sight of Sankaty light, Nantucket Island, they are too near Davis's South Shoal, and will keep to the southward till they pass it.

From the southward and eastward, shape the course for Navesink lights, observing the precaution of using the lead.

From the southward, bound to New York, nothing is gained by running into

less than 15 fathoms water. To the N. of Barnegat, less than 15 fathoms is unsafe, 10 or 12 fathoms being found within a mile and a quarter of the beach. If in 15 fathoms, in the night or thick weather, the lead should be kept in hand, and the bottom examined; gravelly bottom indicates too near an approach to the land.

To run for New York Harbour from the Light-Vessel.—When up with the light-vessel, if without a pilot, steer N.W. by W. $\frac{1}{2}$ W., and after shoaling the water to 8 fathoms take up the range for the channel to be entered according to the directions for New York Bay and Harbour.

Vessels Bound to Delaware Bay.—From the northward and eastward.—Vessels striking the Block Island soundings in less than 30 fathoms, will steer S.W. $\frac{1}{2}$ W. or S.W. $\frac{3}{4}$ W., and will find nearly the same depth of 30 fathoms, for a distance of 90 miles, till abreast of Barnegat Inlet; after passing inside of 12 fathoms, the lead must be constantly used, to avoid the Five-Fathom Bank.

To run for Delaware Bay from light-vessel on Five-Fathom Bank.—When up with the light-vessel and without a pilot, if intending to enter the bay by the Main Ship-Channel, steer about west, until the water deepens from 7 to 10 fathoms; then take up the directions for Delaware Bay, hereafter given. If bound into Cape May Channel, steer W. by N. $\frac{3}{4}$ N., in 5 fathoms, and $1\frac{1}{2}$ mile from the shore, then refer to the Delaware chart and directions.

PILOTS.—New York and New Jersey Pilots generally board vessels from the southward, between the Capes of Delaware and Barnegat from 10 to 30 miles from shore; and vessels from the eastward, between Nantucket Shoals and Fire Island, from 10 to 15 miles from shore. Boats having pilots on board are always found near Sandy Hook. Vessels approaching New York Harbour in the night or in thick weather without a pilot, will lie in 12 or 15 fathoms, unless the weather is threatening from the eastward, when it is most prudent to avoid a lee shore.

Delaware and Cape May Pilots cruise about 30 miles from the capes. Vessels nearing Delaware Bay in the night will, after passing inside of the light-vessel, which is left to the northward, run by the chart for the channel; soundings 13 or 14 fathoms, dark grey sand, and lie by with Henlopen lights W. or W. by N., distant 3 miles. In thick weather it is most safe for the stranger to keep outside of the Five-Fathom Bank, in not less than 12 fathoms, course grey or yellow sand; a pebbly bottom shows too near an approach to the Five Fathom Bank.

Directions to Vessels Bound Coastwise.—From Delaware Bay to Martha's Vineyard Sound, bring Cape May light to bear W.N.W., and steer N.E., to clear the Five-Fathom Bank, running inside; and then N.E. $\frac{3}{4}$ E., and when coming up with and abreast of the light, bearing north, distant about 5 miles, steer E. by N. $\frac{3}{4}$ N. to Martha's Vineyard Sound, passing southward of Block Island; these courses are reversed for going to the southward and westward.

Bound to Delaware Bay, after passing Sandy Hook, steer S., or S. $\frac{1}{4}$ W., according to your distance from land, to clear Barnegat Shoals, and when clear of Barnegat steer S.W. $\frac{1}{2}$ S., nearly parallel with the shore inside the Five Fathom Bank to Cape May, or S.W. by S. up to and outside the light-vessel. N. of Barnegat, where the shore is bold, and the bottom very irregularly broken, 8 or 9 fathoms may be had near the beach; it is best to keep in not less than 13 fathoms; S. of Barnegat 9 or 10 fathoms is safe till up with the Five-Fathom Bank off Hereford Inlet. The land may be kept in sight from Sandy Hook to Cape May. These directions are reversed going north to New York.

Note.—Masters of coasting-vessels familiar with the ground, will run along shore in from 7 to 10 fathoms, feeling the bars of the different inlets in passing with the lead, and keeping off in 10 fathoms, to avoid the shoals and broken ground off Absecum and Great Egg Harbour.

Soundings near the Coast.—From Sandy Hook towards the S., the bottom changes from fine sand to coarse grey sand; on approaching Barnegat it becomes

gravelly, and off the mouth off that inlet it is gravel, pebbles, and in some places shells. The soundings also change from 10 to 7 fathoms at the same distance from the shore. After passing Barnegat the bottom changes from gravel to yellow and grey sand with yellow specks, found off Old Inlet, Little Egg Harbour. Off Great Egg Harbour, the bottom, in from 8 to 10 fathoms, is fine grey sand; to the S. of this, yellow sand is again met with, and is carried up to Hereford Inlet. S. of this inlet, and abreast of Cape May, the bottom is white or grey sand.

There is a spot of mud off cold Spring Inlet, which is a very good mark. Between the Five-Fathom Bank and Barnegat, the bottom is broken and the soundings uneven.

DANGERS.—On the lee shore.—To the westward of Fire Island Inlet, the shoal ground forming the bars of the inlet, extends from ½ to 1½ mile from shore.

On the Jersey shore there are shoals off Barnegat and the inlets to the S. of it, extending from 1 to 1½ mile from shore; they are to be avoided by using the lead.

If the light-vessel S. of Five-Fathom Bank should be off its station, vessels running from Delaware Bay will pass clear of the bank and of *McCries'* Shoal, by keeping the bearing of Henlopen light to the northward of W. ½ S.: and those bound to the northward will pass outside of the bank, by keeping in more than 12 fathoms.

TIDE TABLE FOR THE PRINCIPAL POINTS BETWEEN BLOCK ISLAND AND THE DELAWARE.

STATION.	Point Judith.	Montauk.	Fire Id. Inlet.	Sandy Hook.	Cape May.	Cape Henlopen.
High Water, full & ch.	7h. 32m.	8h. 20m.	7h. 23m.	7h. 25m.	8h. 19m.	8h. 00m.
Mean rise&fall springs	3 ft. 9 in.	2 ft. 6 in.	2 ft. 7 in.	5 ft. 6 in.	6 ft. 0 in.	4 ft. 6 in.
Ditto neaps ..	3 6	2 0	1 9	4 0	5 0	3 0

The tides run about 6¼ hours each way; the time of slack water varies from 15 to 30 minutes.

LONG ISLAND SOUND.—The entrance to Long Island Sound is to the westward of Block Island, and between it and Montauk Point, the eastern end of Long Island; and then between the eastern end of Long Island and Watch Hill Point on the northern shore, being here about 4½ leagues broad; it thence extends full 30 leagues in a westerly direction. Its southern side is bounded throughout by Long Island, the land of which is generally low and level, some few risings excepted. The Landmark Hills are situate about 12 leagues to the westward of Montauk Point; and Hempstead Hill, toward the eastern end, is 319 feet above the level of the sea.

Long Island Sound may be considered a kind of inland sea, commencing at Gull Island, and extending westward to Sand's Point light, being from 3 to 25 miles broad, dividing Long Island from the state of Connecticut, and affording a good and safe inland navigation to New York; being furnished with the following excellent light-houses, which mostly indicate and guide to some of the numerous harbours.

Light-houses and Light-Vessels in the EASTERN PORTION of LONG ISLAND SOUND, to the meridian of NEW HAVEN, or 73° W.

SOUTHERN SIDE OF SOUND.—On MONTAUK POINT, the E. point of Long Island, which bears W. by S., 12 miles from the S.W. point of Block Island; and from W. point of Fisher's Island S.E. by S., distant 14 miles, is a white light-house, in latitude 41° 4′ 13″, and longitude 71° 51′ 6″; the tower, which is of stone, is 97 feet in height, and 172 feet above the sea, and exhibits a fixed light, which is varied by a flash every two minutes, visible 20 miles. The flashes of this light will be seen 3 miles further than the fixed light between the bearings of N. 60° W. by the north to S. 44° W. The keeper's dwelling, on hill adjoining tower, painted brown. This light is situate 49 miles from Gay Head, 32½ from Great West Bay, and 68 from Fire Island light.

GARDINER'S ISLAND.—On the N. point, in latitude 41° 8′ 18″, and longitude 72° 8′ 13″, a light-house of brown colour 27 feet in height, and 29 feet above the sea, showing a fixed light visible 11 miles, between S. 6° W. by the north to S. 43° E. A cast-steel bell struck by machinery every 15 seconds. To guide vessels clear of the northern end of Gardiner's Island.

LITTLE GULL ISLAND.—S. side of main entrance to Long Island Sound, in latitude 41° 12′ 21″, and longitude 72° 6′ 5″, a grey granite light-house, 74 feet in height, and 92 feet above the sea, exhibiting a fixed light, visible 17 miles, and illuminating the entire horizon. The keeper's dwelling, two stories high, with Mansard roof, is built of red sandstone, with granite trimmings, and connected with the tower. The buildings stand on a projecting pier of granite, and the light is intended to mark the eastern entrance to Long Island Sound. A steam siren sounding 15 seconds at intervals of 40 seconds. When this machinery is not in order a bell will be sounded every 10 seconds.

PLUM ISLAND.—On the W. end of the island, at the N.E. extremity of Long Island and North of Gardiner's Bay, in latitude 41° 10′ 13″, and longitude 72° 12′ 22″, a grey light-house 34 feet in height, and 63 feet above the sea, exhibiting a revolving light every half minute, visible 14 miles between S. 38° E. by west to N. 29° E. A fog-bell at same interval as Gardiner's Island. To guide vessels through Plum Gat.

LONG BEACH BAR.—Entrance from Gardiner's Bay to Orient and Green Port Harbours and to Peconic Bay. A white iron screw-pile structure, standing in 5 feet of water at mean tide; piles red, dwelling and tower white, and lantern black, exhibiting a fixed red light, 58 feet above the sea, visible all round, 13 miles. Should be passed at least 160 feet outside of the buoy on the extremity of the shoal.

CEDAR ISLAND.—Entrance to Sag Harbour, Long Island, in latitude 41° 2′ 26″ and longitude 72° 15′ 19″, a granite light-house on the keeper's dwelling, 31 feet in height, and 34 feet above H.W., showing a fixed light, visible 11 miles all round.

HORTON'S POINT.—On the point in latitude 41° 5′ 4″, and longitude 72° 26′ 25″, a white light-house, 30 feet in height and 110 feet above the sea, exhibiting a fixed light, visible 17 miles between S. 59° W. by the north to N. 59° E. A square brick tower, with keeper's dwelling attached, cemented and white-washed.

NORTHERN SIDE OF SOUND.—WATCH HILL.—On Watch Hill Point, 3 miles S.E. of Stonington, in latitude 41° 18′ 11″, and longitude 71° 51′ 11″, a grey granite light-house attached to S.E. corner of keeper's dwelling; the dwelling white, 40 feet in height, and 62 feet above the sea, exhibiting a fixed light, visible 13 miles between N. 82° W. by the south, to N. 83° E.

STONINGTON.—E. side of entrance, in latitude 41° 19′ 39″, and longitude 71° 54′ 0″, a white light-house, 30 feet in height, and 50 feet above the sea, exhibiting a fixed light, visible 13 miles between N. 86° W. by the south, to N. 76° E. A harbour light on the keeper's dwelling; it bears from Watch Hill light-house N.W. ½ W., distant 4 miles; from Cotomset Rocks N. by W. ¾ W., 3¾ miles; from Latimore Reef, N.E. ¼ E., 3¼ miles; and from Wamphrass Rock Shoal, E. ½ N., seven-eighths of a mile.

EEL GRASS, light-vessel to mark Eel Grass Shoal, in Fisher's Island Sound. This

vessel is painted lead colour, with the words, "Eel Grass" on each side in black letters, and is furnished with a fog bell and horn. She exhibits one fixed light at 32 feet above the sea, visible 10 miles all round; is sloop-rigged, without any day-mark. Ship Channel to the southward; North Dumpling light-house W. by S. ¼ S.

MORGAN POINT.—Near Mystic, on N. side of Fisher's Island Sound, in latitude 41° 18′ 57″, and longitude 71° 59′ 3″, a grey light-house 34 feet in height, and 44 feet above the sea exhibiting a fixed light, visible 12 miles between S. 58° W. by the east to N. 87° E. On keeper's dwelling; a harbour light.

NORTH DUMPLING ISLAND.—Fisher's Island Sound, a white light-house 25 feet in height, and 70 feet above the sea, exhibiting a red fixed light, visible 14 miles all round. On keeper's dwelling. A fog bell.

NEW LONDON.—W. side of entrance to River Thames, in latitude 41° 18′ 58″ and longitude 72° 5′ 4″, a white light-house 83 feet in height, and 86 feet above the sea, exhibiting a fixed light, visible 15 miles between S. 8° W. by the east to N. 4° E., 270°. A stone tower; keeper's dwelling painted drab attached. A trumpet sounding 6 seconds at intervals of 14 seconds. To guide to New London and into the River Thames.

On Black Ledge, at entrance to New London Harbour is a granite beacon, surmounted by a shaft and cage of iron, 20 feet in height.

BARTLETT'S light-vessel, off New London, about 4 miles northward of Little Gull Light, and coloured black with white streak, with "Bartlett's Reef" painted in large letters on each side, exhibiting two fixed lights, 28 feet above the sea, and visible about 11 miles. A fog bell and horn for thick weather.

On the RACE ROCK off Fisher's Island, a light-house building.

CORNFIELD POINT Light-vessel. Off the S. side and near the centre of Long Sand Shoal, and Cornfield Point, mouth of Connecticut River in latitude 41° 13′ 30″, and longitude 72° 22′ 50″. This vessel is painted red and is sloop-rigged, with a square cage day-mark, also red, and has the name painted on each side in large white letters. She exhibits one fixed red light, visible 12 miles. A fog bell and horn. She is moored in 7½ fathoms, about one-eighth of a mile from the centre of the shoal, with Saybrook light-house N.E. ¾ N.; Plum Island light-house E.S.E.; Faulkner's Island light-house W. ½ N.; Cornfield Point, N.; Bartlett's Reef light-house E. by N.; and Gull Island light-house E. by S.

SAYBROOK.—On Lynde Point W. side of mouth of Connecticut River, in latitude 41° 16′ 15″, and longitude 72° 20′ 16″, a white light-house 70 feet in height and 80 feet above the sea, exhibiting a fixed light visible 15 miles between S. 74° W. by the south to N. 89° E. A fog bell. This light is intended to guide vessels into Connecticut River, and bears N.W. by W. ¾ W., 11½ miles from the Gull light, and N.W. ¼ N. from the light on Plum Island, distant 8½ miles. It will always be advisable to give Saybrook light a berth of 3 or 4 miles, and steer W. to the S. of Cornfield Point light-vessel for Faulkner's Island light.

There are three small lights inside of Saybrook Point for the use of the river navigation.

FAULKNER ISLAND.—On the Island off Guildford Harbour, in lat. 41° 12′ 41″, and long. 72° 38′ 54″, a white light-house 44 feet in height, and 98 feet above the sea, exhibiting a fixed light, varied by a flash every minute and a half, visible 15 miles all round. Stone tower with keeper's dwelling attached. A bell to be erected, to be struck by machinery, at intervals of 15 seconds, to guide vessels through Long Island Sound, and clear of reefs in the vicinity of the island. Ship Channel to the southward.

There are two Faulkner Islands, and the light-house is erected upon the larger one; they are bold-to on the southern side, but to the S.-eastward of the light there are from 3 to 4 fathoms.

NEW HAVEN.—On South-west ledge, entrance to New Haven Harbour, is a fixed white light, visible 13 miles. Position 41° 14′ N., long. 72° 54′ 45″ W. A fog bell struck every 15 seconds.

On the end of the Long Wharf at New Haven there is a white light-house, 21 feet above the sea, showing a red fixed light, visible 9 miles.

Light-houses and Light-Vessels in the WESTERN PORTION of LONG ISLAND SOUND.

NORTHERN SIDE OF THE SOUND.—STRATFORD PORT.—Middle Ground light shows alternate red and white flashes at intervals of 30 seconds, with short periods of total darkness intervening, visible 13½ miles. A fog bell will be sounded during thick weather giving three blows in quick succession every 30 seconds. Position 41° 3′ 32″ N. long. 73° 5′ 45″ W. Ship Channel to the southward; Old Field Point S. by W. ¼ W.; Stratford Point light-house, N.

The Middle Ground is particnlarly dangerous to the navigation of Long Island Sound. It bears about S. ½ W. from Stratford Point light; N. by E. from Old Field Point light, and E.N.E. from Eaton's Neck light, distant nearly 5 leagues. You may go on either side of the shoal in safety. The northern channel has from 3 to 11 fathoms, and the southern from 8 to 24 fathoms. The length of this shoal is about a league N. by E. and S. by W.; the shallowest part is near the middle of the shoal, where there are only 1½ feet at low water, and the centre of the shoal is nearly in the middle of the Sound.

STRATFORD PORT.—At the W. entrance to Stratford River in latitude 41° 9′ 5″, and longitude 73° 5′ 53″, a light-house painted in black and white vertical stripes, 23 feet in height, and 53 feet above the sea, exhibiting a revolving light every minute and a half, visible 12 miles, between S. 81° W. by the west, to N. 57° E. A fog bell is struck by machinery at intervals of 10 seconds for 4 blows; a pause of 30 seconds, and then the 4 blows repeated. An octagonal wooden tower with keeper's dwelling, painted white, attached, to guide through Long Island Sound. It bears from New Haven light-house W.S.W. ½ S., distant 10½ miles; from Old Field Point light-house N. by E.. distant 10½ miles; and from Black Rock light-house E., distant 5½ miles.

On PENFIELD REEF, off Bridgeport Harbour is a light-house showing a red light, flashing every 5 seconds, and visible 13 miles. In thick or foggy weather a bell is sounded.

BRIDGEPORT.—About 1½ mile S. by E. of the town of Bridgeport, a light-house on iron screw piles painted red; tower and dwelling painted white. Mansard roof, slate colour, and lantern black, exhibiting a fixed red light, elevated 60 feet, visible 13 miles all round. A cast steel bell struck every 15 seconds. On the west side of channel into Bridgeport Harbour, which is quite shoal, and should not be approached as a harbour of refuge for strangers. The structure must be passed to the eastward, and not approached nearer than 200 feet. Latitude 41° 9′ 24″, longitude 73° 10′ 28″.

BLACK ROCK HARBOUR OF REFUGE.—This light-house is about 2 miles to the westward of the bar of Bridgeport, and erected upon the S. point of Fairweather Island at the entrance to Black Rock Harbour. The light-house is situate in latitude 41° 8′ 30″, and longitude 73° 12′ 44″, and is painted white, being 35 feet in height, and 52 feet above the sea, and exhibits a fixed light visible 13 miles, between S. 58° W. by the east to S. 89° E. Stone tower, with keeper's house, painted white, attached, to guide into harbour of refuge at Black Rock.

NORWALK ISLANDS.—On the west end of Norwalk Island, west entrance to Norwalk River, in latitude 41° 2′ 53″, and longitude 73° 24′ 50″, a granite light-house 34 feet in height, and 40 feet above the sea, exhibiting a fixed light varied by a red flash every minute, and visible at the distance of 12 miles, between S. 76° W. by the south to N. 73° E. On Keeper's dwelling. To guide vessels

through Long Island Sound and into Norwalk River. S.S.W., ½ a mile of the light-house, is a ledge of rocks.

Vessels coming from the eastward, abreast of Faulkner's Island, will, after steering W. ¾ S. for 21 miles, pass about midway between the Middle Ground and Stratford Point Lights, and make the light on Eaton's Neck, Long Island, bearing S.W. by W. ½ W. on the port bow, distant 15 miles; they may then steer W. by S. ½ S. for 17 miles, where they will have Norwalk Island light bearing N.N.E., about 2¾ miles distant. But if the wind hangs to the southward, it will be well to stand from abreast of Faulkner's Island, W.S.W., 22 miles, where they will drop into 22 or 23 fathoms on the meridian of the Middle Ground and Old Field Point, and from thence steering W. ¼ N. will come to where they will have the Norwalk Light bearing as before.

From the W. end of Norwalk Island, where the Norwalk light-house is erected, a reef stretches out nearly a mile in a W. by S. ¾ S. direction, and has a buoy upon it. There is also another ledge about a mile S. W. ¾ S. from the light called Budd Reef, with 5, 9, and 12 fathoms, close to around it.

At W. by S. from Norwalk light 3 miles distant is Long Neck Point; there is good anchorage to the eastward of the Neck, with the light bearing east; but when to the W. of Long Neck Point, you should be careful of Smith's Reef, which lies S.W. by W. 1 mile from it, and also a Reef called the Cows, in the same direction from the point from Long Neck Point, 2¾ miles, and S. from Shippan Point ¾ of a mile; they are bold-to until you are close to the rocks.

Great Captain Island.—Near Greenwich point, in latitude 40° 58′ 55″ and longitude 73° 37′ 6″, a granite light-house 34 feet in height, and 62 feet above the sea, on keeper's dwelling, exhibiting a fixed light visible 14 miles all round. This light-house bears W. by S. ½ S., about 10 miles from Norwalk light, and between the townships of Greenwich and Rye; from the light-house on Eaton's Neck, Long Island, W.N.W. ½ W., distant 10½ miles, and from the Execution Rocks, N.E. distant 8 miles.

Throgg's Neck.—On the N.E. side of Fort Schuyler, and S.E. end of Neck, N.W. side of entrance to East River in latitude, 40° 48′ 17″, and longitude 73° 47′ 9″, a white wooden light-house 61 feet in height, and 66 feet above the sea, exhibiting a fixed light, visible 14 miles, between N. 89° W. by the south to N. 31° E. A fog-bell struck at intervals of 15 seconds.

The above light-houses are all situate on the northern shore; those which follow are built upon Long Island, which forms the southern shore of the Sound.

SOUTHERN SIDE of the SOUND.—Old Field Point, in latitude 40° 58′ 34″, and longitude 73° 6′ 48″, a white light-house 34 ft. in height, and 67 feet above the sea, exhibiting a fixed light visible 13 miles, between S. 77° W. by the north, to S. 79° E. Keeper's dwelling, two stories high, of grey granite, with light on top, bearing from Stratford Point light-house S. by W., 10½ miles, and E. from Eaton Neck light, from which latter it is distant 13 miles; the Middle Ground lies nearly between this light-house and that on Stratford Point.

Eaton's Neck.—E. side of entrance to Huntington Bay, in latitude 40° 57′ 12″, and longitude 73° 23′ 25″, a white light-house 60 feet in height, and 142 feet above the sea, exhibiting a fixed light, visible 18 miles, between S. 89° W. by the north to S. 62° E. Stone tower, with keeper's house, painted white, attached. To guide through the Sound and to Huntington Bay.

Lloyd's Harbour.—On the S.E. point of Neck, N. side of entrance to the harbour, in latitude 40° 54′ 55″, and longitude 73° 25′ 44″ a white light-house 34 feet in height, and 48 feet above the sea, showing a fixed light, visible 12 miles. Square tower, of brick, with Keeper's house, painted white, attached. To guide through Huntington Bay and into Lloyd's Harbour.

Execution Rocks.—Off Sands Point, in latitude 40° 52′ 38″, and longitude 73° 43′ 57″, a white light-house 42 feet in height, and 54 feet above the sea, exhibiting a fixed

light visible 13 miles all round. A trumpet sounding at intervals of 24 seconds, and a fog horn in case of accident to the trumpet. A stone tower with keeper's dwelling of granite attached on the west side. In addition to the light on the Execution Rocks, there are or were two spar buoys, red and black horizontal stripes, one on the E. and one on the W. end, both in 18 feet water ; and off Sand's Point is a black spar buoy, No. 9, in 21 feet water.

SAND'S POINT.—At the E. entrance to Cow Bay, in latitude 40° 51′ 55″ and longitude 73° 43′ 28″ a white light-house 41 feet in height, and 53 feet above the sea, exhibiting a revolving light every half-minute, and visible 13 miles, between S. 41° W. by the north to N. 69° E. The rocks extend from the shore opposite the light N.W., one-eighth of a mile. High water, 11h. 12m. ; rise 8 feet 7 inches.

NORTH BROTHER ISLAND.—On the south end of North Brother Island, a one storey building painted drab, 50 feet above the sea, showing a fixed light, visible 12 miles, between E. 5° N. by the south to N. 6° W. To guide through the channel between North and South Brother Islands.

From the position left with Norwalk light bearing N.N.E., about 2½ miles distant, a W.S.W. course for 15 miles will bring you up with the Execution Rocks.

BLOCK SOUND.—Block Sound is the name given to that portion of the navigation to the westward of Block Island, and northward of Montauk Point, as far as Fisher's Island, and the Race to Plum Island. In this Sound are several dangers to be avoided.

MONTAUK SHOAL.—In approaching Montauk Point from the southward or westward, you must be careful in a large ship to keep clear of the Montauk Shoal, which lies S. by E. from the light-house on the point, distant 2½ miles. It is of hard sand, extending N.W. and S.E. about 1 mile, having 4 fathoms on it, shoaling suddenly, and breaks in heavy weather.

FRISBIE'S LEDGE is a portion of hard rocky bottom lying S. by W., 9 miles distant from Montauk Point, with from 8 to 15 fathoms, and nowise dangerous to any vessel. You may keep the shore on board from the highlands (say three-quarters of a mile), and haul round Montauk Point, being careful of a reef that runs out northward from the point nearly a mile, on the outer part of which are 5 fathoms. This shelf extends along shore westward to Shagwong Point, with 3 and 3½ fathoms on its edge.

GREAT EASTERN ROCK, is a dangerous rock with 4 fathoms near it, lying E. ½ N. 1½ mile from Montauk Point, this rock is marked by a black buoy. Phelps' Ridge of 4¾ fathoms lies half a mile N.N.W. of Great Eastern Rock, between these dangers is a depth of 6½ fathoms.

SOUTH WEST LEDGE.—The S.W. Ledge of 5 and 6 fathoms, lies in a line from the southern point of Block Island to Montauk Point, within 3 miles of the land of the former and 10 miles of the latter; on each side of it are 9 and 11 fathoms, the greatest depths between it and Montauk Point being 10 and 11 fathoms, the sea sometimes breaks on this ledge in heavy weather.

WASHINGTON SHOAL of 2 and 3 fathoms, lies to the N.W. of Montauk Point, and is about a mile in extent E.S.E. and W.N.W., and a mile off the land of Shagwong Point.

SHAGWONG REEF, on which a black nun-buoy is placed, bears N.W. ½ N. from the light-house on Montauk Point 4 miles distant. The reef ranges N. by W. and S. by E., about ½ a mile in length.

THE MIDDLE GROUND, or CERBERUS, is a rocky shoal, having but 13 feet on the shoalest part, which consists of pointed rocks, and which will generally be recognized by the rippling of the tide waves ; the N. and E. sides are steep, having 10 and 15 fathoms within half a cable's length of the shoalest part. It extends N. by E. and S. by W., three-quarters of a mile. The S. and W. sides shoalen gradually from 13, 10, 9, 8, 7, to 5 fathoms sandy bottom. It lies N.N.W. ½ W., 7¼ miles

from Montauk light-house ; E.S.E. ¼ S., 7 miles from the Gull light, and S.W. ¾ S., 9¾ miles from the light-house on Watch Hill Point, This shoal is marked by a red and black buoy, striped horizontally, in about 18 feet water. To avoid this rock in the daytime, observe a conspicuous hill, with a notch in its centre, at the back of New London, called Pope's Hill. This kept a ship's length open, either to the eastward or westward of Mount prospect (or the sand hills of Fisher's Island) will keep clear of the rocky shoal, in 10 or 15 fathoms to the eastward, and in 8 or 9 fathoms to the westward. The tide sets strong over the shoal. In calm or little winds, ships should anchor before any of the marks or bearings are too near.

In the offing, between Montauk Point and Block Island, it is high water at a quarter-past 9 full and change ; and midway between the flood sets N.W. 1¼ knot, and the ebb S.E., 2 knots per hour. To the northward of Block Island, between that and the main, the flood sets W. by S., 1 knot, and the ebb E. by N , 2½ knots per hour ; and on towards Fisher's Island, the flood sets W.N.W., 1⅕ knot, and the ebb E.S.E., 2 knots per hour.

The Bearings and Distances of sundry places from the light-house on Montauk Point are as follows :—

The S.W. part of Block Island bears E. by N. ½ N., distant 12 miles.

Shagwong Reef bears N.W. ½ N., distant 4 miles.

The E. end of Fisher's Island bears N. ¼ W., 13 miles.

Watch Hill Point light-house, bears N. ¾ E., distant 13 miles. There is a reef extending from Fisher's Island to Watch Hill Point, leaving a passage between the E. end of the reef and Watch Hill Point half a mile broad.

The Race Rock, on which there is an iron spindle, bears S.W. half a mile from the W. end of Fisher's Island and from Montauk light-house N.W. by N., 13¼ miles distant. It has but 3 feet water upon it, with 5 and 7 fathoms between it and the island, and 15 and 17 fathoms to the westward close to. A light-house is being erected upon this rock as previously noticed.

The Gull Islands bear S.W. ½ W. from the Race Rock, 3½ miles distant.

The light-house standing on the W. Chop of New London Harbour bears N. by W. ⅛ W., 4½ miles from the spindle on the Race Rock.

Bartlett's Reef, on which is a buoy and a light-vessel, bears N.W. ¾ W., 3¾ miles from the Race Rock.

Little Goshen Reef, where a buoy is placed, bears E.N.E., 1¾ mile distant from the buoy on Bartlett's Reef.

The light-house at New London Harbour bears from the buoy on Little Goshen Reef N.N.E. ½ E., about 1¾ mile distant.

The S.W. Ledge, New London Harbour, where a buoy, black and red horizontal stripes, is placed, bears N. by W. from the Race Rock, distant 4½ miles.

The E. Chop of New London Harbour bears N. by E. ¼ E. from the S.W. Ledge, three-quarters of a mile distant.

The light-house bears from the buoy on the S.W. Ledge N.W. by N., 1 mile distant.

The Valiant or Middle Race Rock lies about S.W. ¾ S. from Race Rock 2 miles distant ; N.E. by E. ½ E., 2 miles from the light on the Gull Island, and S. ¼ E., 6 miles from New London light-house, and has 17 feet on it at low water. This reef is about midway between Race Rock and Gull Island light.

GENERAL DIRECTIONS FOR SAILING FROM NEWPORT, IN RHODE ISLAND, THROUGH, LONG ISLAND SOUND TO HUNT'S HARBOUR.

In sailing from Newport to a proper berth off Point Judith, your course and distance will be S.W. ½ S. for 3 leagues ; and from thence towards the Little Gull Island light-house, W. ½ S., 9½ leagues, and W. by N., 2 leagues ; thus when you get about 5½ miles to the S.W. of Point Judith, you will bring the light-house at the N. end of Block Island to bear S. ½ W. and in the direction of the reef which runs from the northern part of the island. Proceeding on this course, about 6 leagues, you will leave Watch Hill Point light-house and Fisher's Island on your northern side, but be careful to avoid the rocky reef which extends from the S.W. end of the island, outside which you will see the Race Rock, to the S.W. of which is the Valiant Rock. The Little Gull Island will be on your port side ; having passed these you will fairly have entered the Sound. The distance from the Race Rock to the Little Gull light is 3 miles ; but nearly in a line between Fisher's Island the Little Gull is the Valiant, or Middle Race Rock, which must therefore be carefully avoided.

In proceeding from the Gull Island light up the Sound, steer W. ¼ N. for about 8½ leagues, and it will bring you up within a mile to the southward of Faulkner's Island light-house ; observe, in running the above course to give the Long Sand Shoal a berth ; it lies S.-westward of Saybrook, 2 miles from the land, and is a narrow shoal 4 miles in length, and we believe marked by a buoy at each end, and also a light-vessel, marked " Cornfield," as already noticed. From thence a W.S.W. ¼ W. course for 8 leagues will carry you to a berth off Old Field light-house ; here steer W. ¼ N., 5 leagues. and having passed Eaton's Neck light-house, a W.S.W. course will take you up to Sands' Point light ; then leave this light on your port side, and the Execution Rocks light-house on your starboard. In steering the above W. ¼ N. course from Old Field Point to Eaton's Neck, be careful when making the latter point, of the shoals lying to the northward ; that part stretching from the point has a buoy upon it, at about three-quarters of a mile from the point. The next is a detached shoal of 3 feet and marked by a buoy, about 1½ mile from the point ; between these two buoys there is a channel of 8 fathoms depth. N. by E., 2½ miles from the point, is a shoal of 3½ fathoms with 8 and 14 fathoms between it and the former shoal of 3 feet. If, when up to Faulkner's Island, should you prefer going to the northward of the Middle Ground, steer as recommended in page 17 ; and you may, if you think more prudent, adopt the courses there given to the southward of the Middle Ground.

If a ship could have a fair departure from the middle of the Race, and is obliged to run in a dark night or thick weather, the best course would be W. ¼ S., 15 leagues towards Stratford light, as it would afford the largest run on any one course, and if made good, will carry you 2 miles S. of Stratford Point light in 6 fathoms water, and 2½ miles N. of the Middle Ground ; on this course you will leave Saybrook, Eaulkner's Island, and New Haven lights on your starboard hand, and Plumb Island on your port hand ; you will pass 3 miles S. of Faulkner's Island in 17 fathoms water. When up with Stratford light, and it bears N., 2 miles distant, your course to Sands' Point light is W.S.W. ¼ W., 10½ leagues.

Should you wish to anchor under Faulkner's Island, there is good holding ground on the E. or W. side in 2½ or 3 fathoms, but the best place with the wind from the W., is close to the N.E. point of the island, the light-house bearing S.W. by S. in 2½ fathoms N. from the island a narrow shoal puts off a quarter of a mile, and is

bold-to ; but you are to the N. of it when the centre of Goose Island bears S.W. by W., and when the light bears S.E. by E. you may run for it and anchor.

The course from Sand's Point light to Hart Islands is S.W., and the distance about 2¼ miles ; to the W. of this there is good anchorage for vessels of any size. If a ship, in making these courses good, should be under the necessity of turning to windward, they must be careful to avoid two rocks, one called the Gangway Rock, the other the Success Rock ; the former bears W. 28° S. from Sands' Point light-house, distant a mile, having a black spar buoy floating perpendicularly, in 19 feet water upon it ; the other bearing N.W. by N. from the E. bluff of Cow Bay, distant half a mile, on which an iron spindle is erected. On Gangway Rock, which tapers to a point, there are only 6 feet water, making it very dangerous ; but Success Rock is dry at L.W. : between the two is a channel with 2½ fathoms in it ; they bear from each other N. 40° W. and S. 40° E., being distant one-third of a mile.

The course from Hart Island to Throgg's Point light is S.S.W., about a league ; taking care to avoid the Stepping Stones, which lie on your port hand, and have a black spar-buoy upon them, in 19 feet water ; they are step-to, while the soundings on your starboard side are regular to 3 fathoms. In passing Throgg's Point light, do not haul up until you have passed it at least about one-eighth of a mile ; and when the light bears N.W., steer W., which will carry you in mid-channel. A shoal of 17 feet extends S.S.E. from Throgg's Point ; but, by following the above directions, that will be easily avoided. From Throgg's Point to Hunt's Harbour the course is W., observing to keep in mid-channel.

From Old Field Point light to Eaton's Neck light, the bearing and distance are W. 13 miles ; Crane Neck is 2 miles to the westward of Old Field Point, and the land between it and Eaton's Neck forms Smithstown Bay, in which the water shoals gradually from 12 to 3 fathoms. There is a reef running from the northern part of Eaton's Neck, to the distance of half a mile, as noticed previously, near the edge of which are 6 and 5 fathoms. From Eaton's Neck the northern sandy point of Lloyd's Neck bears W. ¼ S., distant 4 miles ; between them lies the deep bay of Huntington, where a ship of any size may obtain anchorage, only keeping the eastern shore on board ; the entrance is easy, and the ground good.

Within Lloyd's Harbour on the W. and Cow Harbour on the E., are from 4 to 3 fathoms water, with a bottom of mud. Here N.E. winds, blowing fresh, frequently swell the rise of the tides, which commonly average from 7 to 12 feet. On the western side of Lloyd's Neck is Oyster Bay, the entrance to which is narrow ; when going in here, keep nearer Lloyd's Neck until you have passed the tail of the Middle, this being a sandy flat, which runs from Hog Island, on the western side, to the distance of 180 fathoms ; when fairly within it, the bay is clear, and the anchorage good throughout.

From Lloyd's Point to Metinicook Point, the course and distance are W.S.W. ¾ W., 7 miles ; and from Metinicook Point to Sands' Point light, the course is nearly W.S.W., and the distance 5 miles ; between these two last points is Hempstead Bay, in which is good anchorage, keeping the eastern shore on board. At three-quarters of a mile to the northward of Sands' Point light-house are the Execution Rocks.

BLOCK ISLAND TO GARDINER'S BAY, WITH DIRECTIONS FOR ENTERING THE SEVERAL HARBOURS ON THE NORTHERN SHORE OF LONG ISLAND SOUND.—Vessels proceeding from the S.W. end of Block Island towards the Montauk light-house point, should steer W. ½ S. about 3 leagues ; between the island and point the water is deep, from 8 to 10 fathoms, one part excepted, where about 2½ miles from the island is a fishing-bank, of 5 fathoms, commonly called the S.W. Ledge ; and during blowing weather with a heavy sea, the water breaks over it. As you approach Montauk Point you will lessen the depth of water to 9, 7, and 5 fathoms ; and a sandy flat runs out from the point, on the outer edge of which are 4 and 5 fathoms, rocky ground. Outside of this flat are several ripplings, but these are not in the way of

shipping, having 6, 7, 8, and 9 fathoms over them. The Shagwong and Cerberus Rocks, previously noticed, must here be particularly guarded against; the former lies 3½ miles N.W. ½ N. from Montauk Point light-house, and extends nearly half a mile N. by W. and S. by E. It is dangerous, having only 8 to 12 feet water over it.

The Cerberus Rock (noticed in p. 18) lies almost midway between Long Island and Fisher's Island, and has 13 feet over its shallowest part. The N. and E. sides of the rock are steep, having from 10 to 15 fathoms within half a cable's length of the shoalest part; it extends N. by E. and S. by W., about three-quarters of a mile. On the S. and W. sides the water deepens gradually from 5 to 13 fathoms. The tides generally show the situation of the reef by the rippling they make in passing over it.

When proceeding from the eastward towards Gardiner's Island, keep the two bluffs, or high parts of the land, situate at the westward of Montauk Point, open of each other until Willis's Point, on the E. side of Fort Pond Bay, comes open of Montauk False Point, then W. by N. ¼ N., 15 miles, will carry to the northward of Gardiner's Island light.

Fort Pond Bay is a very convenient place for both wooding and watering; the ground is clean and good; your anchorage, in whatever depth, most convenient. In a large ship bring Willis's Point to bear N.E. to N.E. by N., when you will have, in the centre of the bay, about 7 fathoms water. There is a pond of fresh water on the shore, at the further end of the bay.

The tides set very strougly upon and round Montauk Point; the flood running N.E., and the ebb the contrary. At the Shagwong Reef the flood sets W. by S. Having rounded Montauk Point, in day-time, and bound to Gardiner's Bay, steer, N.W. by W. until you clearly see the points that form Fort Pond Bay, and discover the red cliff on the western point open of Willis's, or the eastern point; then steer W. by N. for the light on the northern point of Gardiner's Island, passing between Shagwong and the Cerberus Reefs.

But if rounding Montauk Point in the night, during a westerly gale, when the land or light is visible, then anchor when you get the light to bear S.W. by S., in 8 or 9 fathoms, coarse sandy ground. Having brought Montauk point to the southward of W., if the weather is thick, and unable to ascertain your distance from the point, then the lead will be the best guide: run up W.N.W. until you have gained 9 fathoms, then haul off again to 13 fathoms; and, should you suddenly shoal from 10 to 6 fathoms, steer off E. by N. until you get 11 to 12 fathoms, only keep your lead constantly in action, which will effectually prevent your getting on to any of the reefs.

GARDINER'S ISLAND.—The N.E. part of Gardiner's Island lies 14 miles N.W. by W. ¾ W. from Montauk Point. With westerly winds there is a good riding off this part of the island, which is sandy; the marks for anchoring are, the high lands of Plum Island N.W. and the S. part of Gardiner's Island, in sight, bearing from South to S. by W., in 10 or 12 fathoms water, on a bottom of mud and sand.

GARDINER'S BAY is formed by the N. End of Gardiner's Island and the S. end of Plum Island. If bound through the Sound towards New York, your passage from Gardiner's Bay is between the W. end of Plum Island and Oyster Ponds, through which channel are from 4 to 20 fathoms water. Bound into the bay you may go within a cable's length of Gardiner's Island, where there is 10 fathoms water. Be careful not to go too near Gull Rock, which is a single black rock between Plum Island and Great Gull, and called "Old Silas," as there is a rocky spot 1½ mile from it, on which are 3 fathoms at low water. It lies with the following marks and bearings:—a house on Plum Island (standing about one-third of the way between the middle and the N.E. end), on with the northernmost of the two trees which appear beyond the house; the N. end of Plum Island bearing N. by W. ½ W. or N.N.W.; and the southernmost end of Plum Island on with the

northernmost point of Long Island. In order to avoid this rock, when going into or coming out of Gardiner's Bay, be sure to keep the S. point of Plum Island, open of the N.W. point of Long Island, whilst the house on Plum Island is on with the northernmost of the two trees before mentioned. There are several trees, but these appear when viewed at a distance to be only two. This shoal is called the Bedford Reef.

On the Reef off Oyster Pond Point, Plum Gut, entrance to Gardiner's Bay, is a stone beacon, with shaft and cage of iron, 20 feet in height.

The passage between Plum Island and the Gull Rocks is not to be attempted, as there are several sunken rocks, and some which appear, rendering the passage dangerous. In Gardiner's Bay you may anchor in what depth of water you please, in from 8 to 5 fathoms.

On the S.W. side of Gardiner's Island there is very good riding. If to the eastward of this island with an easterly wind, and wishing to take shelter under the S.W. side, give the N.W. end of the island a good berth, and, as the W. side of the island opens, haul round the N.W. point, and anchor where you please. The soundings are regular.

From the W. point of Fishers's Island a dangerous reef runs off about a mile W.S.W., which be careful to avoid. In entering Gardiner's Bay, between Long Island and Plum Island, and between Plum Island and Fisher's Island, the tide sets with great rapidity ; and, in calm weather, the ripple (or race) is heard at a great distance : it has the appearance of shoal ground, although there is no less than 20 fathoms water.

New London light-house kept a sail's breadth open of Plum Island, will lead up into the middle of Gardiner's Bay, in the deepest water, and out of the tide.

NEW LONDON.—In proceeding from Gardiner's Island to New London, leave Plum Island and the Gull on the port, and Fisher's Island on the starboard side. Between them the passage is called the Horse Race, where there is a strong tide : if flood, setting W.N.W., and if ebb, E.S.E. The sea breaks when there is any wind, especially if it blows against the tide ; the Race then appears like a reef, but there is no danger, except those before described. The soundings will sometimes be 5 fathoms, at other times 15 or 16.

The pole on the Race Rock is to be left to the eastward ; you may pass it within the distance of 10 fathoms, in 4 fathoms water. Being through the Race, the best course for a stranger is to bring the light-house on the W. Chop of New London Harbour to bear N. : keep it so, or from N. by E. $\frac{1}{2}$ E. to N. by W. $\frac{1}{2}$ W. until within a mile of it : then run mid-channel into the harbour, leaving the light on the western side. Abreast of the town there is anchorage in 4 or 5 fathoms water, clayey ground.

To sail into New London Harbour, bring the light on Gull Island to bear W.N.W., keeping it in that direction until within 2 miles of it, and after having passed the Race Rock, steer N. $\frac{3}{4}$ W. In coming in or going out of New London, bring the Gull light to bear S.S.W., and New London light N.N.E., leaving the latter on the port hand in going in. If winter time keep well to the westward, particularly when the wind is to the N.-eastward and stormy, and endeavour to gain anchorage off Black Point.

The best anchorage to break off a N.E. gale is about W.N.W., 5 miles from the Gull ; haul up with a N.E. wind, N.W., and run into 10 fathoms water, with a bottom of mud, and anchor immediately ; this position will be between Black Point and Hatchet's Reef ; and will prove the best place to ride in with a N.-easterly gale and thick weather, when you cannot get into the harbour of New London ; Saybrook light will then bear W. by N. or W.N.W.

There are three dangers to be avoided, the situations of which are distinguished as under, viz.:—Bartlett's Reef, on which is a light-vessel ; Little Goshen Reef, having

a buoy in 14 feet at low water, at about 15 fathoms to the eastward of which are 4 and 5 fathoms; and the S.W. Ledge having its buoy on the eastern side of the channel in 16 feet at low water, upon the west side of the ledge: the latter may be approached safely. There are reefs on both sides of the entrance to New London Harbour, particularly the S.W. Ledge and the Black Reef or Ledge, on which is a beacon on the eastern side, at three-quarters of a mile from both the eastern and western shores; the town is situate 2 miles above the light-house, and on the opposite side is the town of Groton. Coming through the Race, bring New London light-house to bear N., and steer for it, until you have passed the S.W. Ledge, then run for the middle of the entrance, and in standing up the river, keep rather off the Groton side. There are reefs off Powder Island and the white rock, to clear which bring the meeting house in New London well open of Fort Port. Common spring tides rise 3½ feet; springs 5 feet.

Further Directions for New London Harbour.—A vessel bound for New London, having brought the Gull light to bear W. by N., or the light on Watch Hill Point N.E. may steer so as to bring New London light-house open of Fisher's Island, and when the spire of New London Church, bearing N. 8° W., comes in one with the gap on Pole Hill, steering with it in that direction between the Race and Valiant Rocks; or bring New London light-house a sail's breadth open to the eastward of the church spire, bearing N. 5° E. which will lead to the westward of the Valiant Rock, and between it and the Little Gull light-house: then proceed for the harbour as before directed.

If the weather be thick and the channel should not be seen, when bound through the Race, then steer for the Gull light-house, and keep it to the northward of W., until New London light-house comes N. ½ E., when steer directly towards it, and leave the Gull half a mile to the westward. When the Gull light-house bears S. by W., steer N.N.E. for the Roads, making a proper allowance for the tides, which are commonly very strong.

In coming out of New London, and bound westward, having left the harbour, bring the light to bear N.W. by W. ½ W., and steer S.S.W ¼ S., 2¼ miles, or until the light bears N. by E., when a W. by S. course will be in a fairway for the Sound. The light-vessel now moored near Bartlett's Reef will be of great service to vessels entering or leaving New London Harbour.

Saybrook.—Nearly W. from New London light, distant 12 miles, and N.W. by W. ½ W. from the Little Gull light, 12 miles, is the light-house of Saybrook; it stands at the western side of the harbour.

In the south-east channel is a depth of 7 feet at mean low tide, three spar buoys, with perpendicular stripes, have been placed to mark it.

From the entrance buoy, bring Saybrook light-house to bear N.W. ¼ W.; steer in on that course, passing close to the outer and middle buoys, keeping the beacon open to the south of the light-house, and bringing the latter nearly in range with, and a little to the south of, the Church in Saybrook Village. When up with the inner buoy, placed about half a cable's length from the beacon, which will then be in range with Fenwick Hall, take a direct course (N.N.W.) for the railroad depôt at Saybrook.

For vessels bound in from the eastward, and for all vessels entering the Connecticut during north-easterly and south-westerly winds, the use of this channel offers superior advantages.

About 2 miles to the westward of Saybrook light-house is Cornfield Point, from which a long spit runs off to the westward, and which is buoyed. There is also a narrow bank nearly parallel to the coast between them, 4 miles in length, named Long Sand Shoal, the middle of which is about 2 miles to the southward of Cornfield Point, on which is a depth of from 9 to 6 feet water, and marked by a light-vessel (see p. 17). A too near approach to this bank might probably prove dangerous, as the edge is very steep, and it may hereafter become connected, at the

N.E., with the bar of the Connecticut River; the tides set right across it to the N.W. and S.E. From the E. end of the bank Saybrook light-house bears N. by E., distant 2 miles. Vessels bound up the Sound should leave Long Sand Shoal on their starboard hand.

Faulkner's Island light-house has already been described; it bears W. ½ S. from Saybrook light-house, distant 5 leagues; give the island a berth of 3 or 4 miles, and if bound across the Sound, the course will be W.S.W. towards Oldfield Point.

NEW HAVEN.—If bound to New Haven, give Faulkner and Goose Islands a berth of a mile, then steer W. by N. ½ N. until past S.W. ledge, on which is a light-house, for the channel mark, which is Fort Hale, in range with Fair Haven spire N.N.E., leaving the red buoy on Adam's Fall on the starboard hand. When nearly abreast of the Fort, give it a berth of a quarter of a mile, and steer up N. ¾ W. for the end of the Long Wharf, on which is a small red light, leaving Black Ledge, which is a quarter of a mile N.W. of the Fort, on the Starboard hand.

There is a spindle on the Quick's Rock which bears from the light S. ¾ E. distant three-quarters of a mile. The buoy on Adam's Fall bears from the spindle N.W. distant half a mile. The buoy on the S.W. Ledge bears from the spindle W.S.W., distant half a mile.

Vessels coming from the eastward pass between the buoy on the S.W. Ledge and the spindle in 3 fathoms water, by keeping midway between the shoals, and leaving the buoy of Adam's Fall about half a cable's length to the eastward, steering on for the end of the wharf. On this shore, in the channel way, there are 5, 4, and 3 fathoms water, muddy bottom: by bringing the light-house to bear S.E., you can anchor in Morris's Cove, near the eastern shore, in 2 fathoms, mud; the course up the channel with a leading wind will be N. In running for the pier, give the Fort Rock a berth.

Vessels bound in from the westward will leave both the buoys on the starboard, and may safely pass within 110 yards of them; in beating in, the soundings will be from 4 to 2 fathoms. Stand in no further than 2 fathoms on the W. shore for the ground is hard, but after you feel a muddy bottom, being then in the channel soundings, keep the lead going, to keep clear of the hard ground on the western shore. High water at 11h. 16m.; rise 6 feet 6 inches.

BRIDGEPORT.—Vessels bound into Bridgeport must leave the outer buoy on the port hand, and steer direct for the beacon on Wells' Point, which bears N.E. from the outer beacon on the W. Flat, about 350 yards distant, leaving the buoy on Stony Bar on the starboard hand and Allen's Flats on the port.

In the Harbour of Bridgeport are three buoys, viz.:—one on Marchand Flats, a mile S.W. from the outer beacon; one on Stony Bar, S.E. from the beacon, 150 yards distant; and one on Allen's Flats. High water, at 11h. 11m.; rise 8 feet 8 inches.

BLACK ROCK HARBOUR.—Bring the light on Fairweather Island to bear N. ½ W. and run for it, and if it be in the daytime you will have it in range with a single hill, situate several miles in the interior, which keep on that bearing until distant half a mile from the light-house. You will then have passed the spindle on the Cows, and have 4 fathoms water; from hence steer N.N.W., until the light bears E. by S., leaving a rock S. by W. from the light., on which is a buoy, on the starboard hand, when you may anchor. In steering the above courses there is 5 fathoms water, when up with the spindle on the Cows, and it shoalens suddenly. High water at 11h. 2m., rise 6 feet 6 inches.

FAIRWEATHER ISLAND.—In coming from the westward, and intending to take the harbour, be careful to avoid the reef called the Cows, by bringing the light to bear N. by W., and run directly for it, until three-quarters or half a mile distant, when if occasion requires, stretch into the westward in a fine beating channel, having from 5 to 3 fathoms water, and good ground. As you approach the light which

stands on the E. side of the harbour, the water gradually shoals to about 2 fathoms. The mouth of the harbour, although not very wide, is not difficult; the light bearing W.N.W. will lead directly to the harbour. The island on which the light-house stands, and the reef called the Cows, on the S. and W. sides, form the harbour of Black Rock. On the easternmost rock of this reef is a spindle, distant from the light half a league, and from which the light bears N. The light stands 240 yards from the S. point of the island, at low water. From this point juts off a single rock 160 yards distant on which are 8 feet at high water, making in all about 400 yards distance. The light bears from this rock N. by E. ½ E. As soon as past this point or rock, the harbour is fairly opened to the northward in any point from N. to W.N.W. You can run from the light with safety, observing, when drawing nearly in, the above directions, and due attention to the lead. The bottom for some distance from this rock southerly, is hard, but as you proceed it will soon deepen. It is safe and good anchorage to the eastward of the light for all winds from W.S.W. to N.N.E., quite down to the mouth of Bridgeport Harbour, which is distant about 2 miles. The shore on the eastern side of the light is bold-to in 3 fathoms, close aboard the light, and so continues until quite down to the S. point of the Island. This bay, to the leeward of the light, between that and Bridgeport, is one of the best bays for anchorage on the N. shore of Long Island Sound, and affords from 4 to 3 fathoms water, the light bearing W. In coming from the eastward, passing Stratford Point light to starboard, the course to Black Rock light is W. by N. ½ N.; keep sounding on the starboard hand, not less than 4 fathoms nor more than 8 fathoms, to the mouth of Bridgeport Harbour.

Between Fairweather Island and the entrance to Bridgeport Harbour, there is good anchorage, in from 2½ to 4 fms., sticky bottom, with the wind from the E.N.E. to S.W. by way of N. Bring the woods on the W. of the harbour to bear N.E., and anchor in any suitable depth.

LONG ISLAND, SOUTH SIDE.—From Montauk Point this island extends about W. by S., 34 leagues. In proceeding along the S. side of the island, the land is generally low and level, excepting a few hills lying about 40 miles to the westward of Montauk Point and the Hempstead Hills, which are 319 feet above the level of the sea. Along the S. coast of the island a flat extends about half a mile from the shore; the E. end of this flat is sand; middle and W. part, sand and stones. When Montauk Point light bears N., 7 or 8 miles, the course along the S. shore of Long Island will be W. by S. ½ S., about 22 leagues, and W. about 11 leagues to the light-vessel off New York Harbour; at about 12 miles distant from the eastern end of the island are from 20 to 30 fathoms water, and from that distance to 20 leagues the water deepens to 60 fathoms. About 4 leagues off the E. end of the island you will have coarse sand and small stones; and at the same distance from the middle and W. end, there is small white sand and gravel, with black specks.

Lights.—SHINNICOCK BAY.—There are a few inlets on the S. side of the island. The first one of any importance is Shinnicock Bay, about 34 miles to the westward of Montauk Point. Here a light-house is erected on Pondquogue Point on the N. side of the bay, in latitude 40° 50′ 57″, and longitude 72° 29′ 55″. The building is of red brick, 150 feet in height, and 160 feet above the sea, exhibiting a fixed light, visible 20 miles between S. 71° W. by the south, to N. 31° E. Keeper's dwelling painted drab attached. This light is one mile N. of the outer or ocean beach, 35 miles to the eastward of Fire Island light-house, and 32½ miles to the westward of Montauk Point light-house.

FIRE ISLAND INLET.—The next place is Fire Island Inlet. Here is a light-house on the E. side of the inlet, in latitude 40° 37′ 54″, and longitude 73° 12′ 48″. The tower is built of yellow brick, 150 in height, and 166 feet above the sea, and exhibits a revolving light every minute, visible 20 miles between S. 85° W., by the south, to N. 83° E. This light-house is 38 miles from the Highlands of Navesink lights, 31 miles from Sandy Hook light-vessel; 35 miles from Great West Bay or Shinnicock light, and 69 miles from Montauk Point.

Fire Island Inlet is navigable for vessels drawing 9 feet water ; it is subject to change, and those who are acquainted with its entrance are guided by the breakers when entering. The shoal off Fire Island light-house extends about a mile from the shore, and a mile from where the light-house stands ; it is bold-to on the eastern side, having 6 fathoms close to it.

Gilgo, New, and Hog Island Inlets are all barred harbours, having very little water. The channel of New Inlet, E. Rockaway into South Oyster Bay, is marked by a spar buoy, white and black stripes, with cage, placed outside the bar in 5 fathoms at low water ; and a spindle on shore, red and black stripes, and having a day-mark on top in the shape of a barrel.

Rockaway Inlet is about 9 miles N.E. of Sandy Hook. This bar is subject to change, and extends 2 miles from the shore ; the depth on the bar is about 9 feet at L.W. The channel is marked by an outer and inner buoy.

Directions.—Should Block Island be made, bearing N., distant 5 or 6 leagues, as before observed, you cannot see any other land to the northward or eastward ; but on nearing the island, Montauk Point will be perceived to the westward, making a long low point, running out eastward, on which is the light-house ; steering from hence about W.S.W. ½ W., Long Island will, when at a distance, appear broken, like islands ; and when Fire Island light bears N., in 15 fathoms, a W. ¼ N. course will carry up to Sandy Hook. The quality of the bottom is various, viz ;—yellow, red, brown, blue, and grey sand, within short distances.

The Highlands of Navesink* will be made out, before you sight the point of Sandy Hook. On the Highlands, which form the most remarkable land on that shore, two light-houses are erected, which together with the light-vessel off the harbour form a good guide in coming direct from sea.

When bound to New York, should you happen to make the land to the southward and fall in with Cape May, (on which is a light-house, exhibiting a revolving light), the greatest caution is necessary, to avoid the shoals near the cape, as well as the bank called the Five Fathoms Bank, lying in the parallel of the cape, and 15½ to the eastward of it, having only 12 feet water on its shoalest part. In thick weather, come no nearer this part of the coast than 20 or 19 fathoms ; but when to the northward of 39°, you may safely approach to 13 or 14 fathoms. There is a light-vessel moored south of the 5 fathom bank.

When the light-vessel on the Five Fathoms Bank bears S.W., 9 or 10 miles, you may steer N.E, about 13 or 14 leagues ; this will bring you up to abreast of Little Egg Harbour, and about 4 leagues from the land, in 14 fathoms ; from thence a N. by E. course, about 19 leagues, will bring you up to near Sandy Hook light-vessel.

The soundings are very regular all along the coast of New Jersey, when sailing from Barnegat towards Sandy Hook ; when to the southward of the lights on the Highlands, you must not open the northern light to the westward of the southern light, as it would bring you too near the Jersey shore.

NOTE.—If you are beating to windward, off the Hook, waiting for a pilot or for a wind, either by night or by day, in standing to the northward, and you suppose the light-house to bear W. from you, you will be near enough to Long Island. When you approach Long Island the soundings are fine white sand ; but on the Jersey shore the soundings are coarser and darker.

As a number of vessels have been lost, bound to New York, from heaving-to with their heads on shore, we cannot too strongly urge on the ship-master the necessity, if he is in doubt of his position, of heaving-to with his head off shore.—*American Coast Pilot.*

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* The Navesink Hills extend N.W. and S.E., nearly S.W. from Sandy Hook to Rariton Bay, and are very commonly the first land the mariner discovers. Mount Mitchell, which is the loftiest of these hills, is 282 feet high. Tomkin's Hill, on Staten Island, is 307 feet high ; and Hempstead Hill, on Long Island, 319 feet high.

NEW YORK HARBOUR.—The entrance to New York Harbour lies between Sandy Hook Point on the S., and the S.W. part of Long Island on the N. The former is distinguished by its light-house ; while from the latter a large sand-bank extends, which very much narrows the channel entrance. A sort of bar may be said to stretch right across it, which is intersected by various channels and these several channels are buoyed and beaconed, according as they are found to alter. The Main Ship Channel is round near to Sandy Hook, and this has several entrances from seaward.

It would not be prudent for any one to take the bar of New York Harbour unless well acquainted with the then existing system of buoyage, as the channels shift. We therefore shall describe the present state of the lights, &c., without going into particulars of directions that might embarrass, if they did not mislead the mariner.

CITY OF NEW YORK.—The situation of this city has been most happily selected, and comprehends the entrance to the Hudson River, with its branching canals, by means of which a water communication has been extended to Lakes Erie, Huron, Michigan, and Superior ; thus forming the most stupendous repository of fresh water on the face of the globe ; while the canal, joining Lake Erie to the Ohio, establishes an internal navigation from New York to the Ohio, Missouri, Mississippi, Pitsburg, Cincinnati, St. Louis, New Orleans, and Gulf of Mexico,—a line of unparalleled length, utility and magnificence.

TIME BALL.—The United States Government has given Notice, that a time ball has been established at the Western Union Telegraph building, New York city :—

The time ball can be seen from the shipping lying at the New York and Brooklyn docks, and on the New Jersey shore, as well as by all vessels in New York bay.

The time ball, 3½ feet in diameter, will be hoisted half-mast at the iron flagstaff, on the tower of the Western Union building at 11h. 55m. A.M., and remain so till 11h. 58m. when it will be hoisted to its highest point, about half-way up the main staff, 250 feet above the ground. It will be dropped by electricity at noon exactly, mean time at New York.

The longitude of New York being assumed to be that determined by the United States Coast Survey for the City Hall, 74° 0′ 24·75″ W. : mean noon at New York corresponds with 4h. 56m. 1·65s. P.M., Greenwich mean time.

If from high winds, or other cause, the ball does not fall at noon, it will be kept at the masthead, and dropped at 12h. 5m 0s. In such cases, a small red flag will be hoisted at 12h. 1m., and kept flying till 12h. 10m.

The time of dropping the ball will record itself automatically, by electricity, near the standard clock of the Western Union Company (which is regulated by signal from Washington observatory), and if by any cause it does not fall precisely at noon, its error will be known.

In the evening newspapers of the day, and in those of the next morning, a notice will be regularly inserted, stating whether the ball dropped at the exact time, and if not, then its error. So that, should high winds or other cause have prevented the signal from being given precisely, it will still be available for rating chronometers.

The following lights are situate near to, and in NEW YORK HARBOUR.

SANDY HOOK light vessel, in 15 fathoms, riding 7 miles from Sandy Hook and Navesink lights, is painted red, with the name of station in white letters on each side, and exhibits 2 fixed lights, elevated 45 feet each, visible 12 miles ; has two masts, and a circular cage-work day mark at the head of each. A fog bell and horn. Entrance buoy to Gedney's Channel bears N.W. ½ W. ; to South Channel

W. by N. ¼ N.; to Sandy Hook light-house W. by N.; to East Beacon W. by N. ½ N.

Scotland Light-vessel.—This vessel is placed to mark the wreck of the "Scotland," she shows two fixed white lights, visible 12 miles. The vessel is in 7 fathoms water with Sandy Hook light vessel E. ¼ S. Highlands of Navesink lights S.W. ¼ S.

HIGHLANDS of NAVESINK.—S. of Sandy Hook, two light-houses, built of reddish grey granite, situate 100 yards apart, the northern one being in latitude 40° 23′ 45″, and longitude 73° 58′ 51″. They are each 53 feet in height, and 248 feet above the sea, exhibiting fixed lights, visible 22 miles each, between N. 45° W. by the east to S. 16° E. The two towers on keeper's dwelling, connected with each other; south tower is square, the northern one octagonal.

SANDY HOOK.—S. entrance to New York Harbour. On this point a white light-house is erected in latitude 40° 27′ 39″, and longitude 73° 59′ 49″; it is 77 feet in height, and 90 feet above the sea, exhibiting a fixed light, visible 15 miles. A stone tower with keeper's dwelling attached. This light is intended to mark the entrance to, and ranges for the channel of New York Bay.

In addition to the above light there are two beacon lights on Sandy Hook. The East Beacon light is situate on the N. point of the hook, and the West Beacon, on the bay side of Sandy Hook, N.W. of main light. These two lights are elevated 35 feet each, visible 11 miles. The light-houses are coloured white, and at the East Beacon there is a steam fog siren, sounding 6 seconds at intervals of 40 seconds. The Eastern Beacon marks the north point of Sandy Hook, and is erected on the keeper's dwelling. When the West Beacon light is obscured by the screen, it marks the outer edge of the bar; and when just clear to the northward of Sandy Hook light-house it marks the turning-point round the S.W. spit into the Main-ship-channel. On the coast of Long Island, New York, and New Jersey, 300 miles of coast, there are 27 life-boat stations.

Within the harbour of New York there are leading lights, intended as ranges for the different channels.

Gedney's Channel Lights, situate near Point Comfort, on the beach, Rayside, 5 miles W. of Sandy Hook. These lights are two in number; the front one, on the Jersey shore, is on keeper's house, in a turret, and is of a white colour, with the top of the lantern black, being 45 feet above the sea. The rear light is in a white tower, 76 feet above the sea. These are both fixed lights, visible 12 and 14 miles respectively, and form a range from the inside of Gedney Channel bar to S.W. spit.

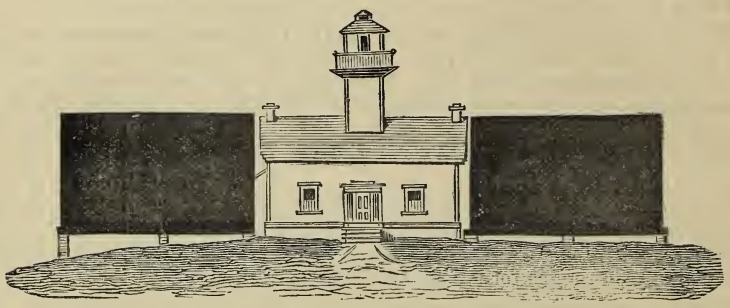
Swash Channel Lights.—These lights are situate on Staten Island, one near Elm Tree Station, and the rear at New Dorp. The front light is elevated 50 feet above the sea. This light-house is painted with two white and one red horizontal bands, with the roof of the lantern red. The rear light is on the keeper's dwelling in a turret, 189 feet above the sea, and is painted red. These lights form a range for the Swash Channel from outside the bar to Main Channel, above Romer Stone Beacon; both fixed lights, visible 12 and 14 miles.

Main Ship Channel Lights are two in number, and situate on the Jersey shore, at Conover, near the beach, and Chapel Hill. The northern light bears from Sandy Hook light S.W. ¼ W., three and a quarter miles, to be used after turning the S.W. spit-buoy; the tower is 60 feet above the sea, and is painted with two white and one red horizontal bands, roof of lantern red. The rear light is on the keeper's house, in a turret, and is 224 feet above the sea. This light-house is painted white. They are situate nearly one and a half mile apart, and are both fixed lights visible 12 and 14 miles. After turning the S.W. spit, by keeping these two lights in range you run in mid channel up to the Narrows.

Day Marks have been constructed at Conover and Chapel Hill light-stations,

for the purpose of distinguishing these beacons more easily during the day, at times when the ground is covered with snow. These marks consist of frames covered with boards coloured black, and are erected on each side of the beacons. The distance from S.W. spit buoy to Conover beacon is 3½ miles :—

CHAPEL HILL BEACON AND DAY MARKS.



CONOVER BEACON AND DAY MARKS NEAR THE BEACH.

Fort Tomkins Light, Staten Island.—There is a white light-house on Fort Tomkins, which marks out the western point of the Narrows ; it is a fixed light on a white frame tower, 46 feet in height and 89 feet above the level of the sea, and visible 15 miles, between N. 8° W. by the east to S. 43° W.

Robbin's Reef Light, off Tompkinsville, lower part of New York Harbour, stands 3½ miles northward of Fort Tompkins light. Is a white stone tower, built on the reef, and marks the western edge of the channel up to the city, and into Newark Bay through Kill Van Kuhl. It is a fixed light, visible 13 miles, and painted white, 66 feet above the sea. A fog bell.

Prince's Bay Light.—This light-house is built of grey stone, with keeper's dwelling attached, and stands near the S.W. end of Staten Island, on the W. side of Prince's Bay, bearing from Sandy Hook light W.N.W., distant 10 miles, and and W. ¾ N. from the Knoll buoy, and is intended to Guide vessels to Amboy and Raritan River, and will serve as a guide to vessels from Mid-channel buoy at entrance to Gedney's Channel to the line of Main Channel Range lights on Point Comfort, and to the line of Swash Channel Range lights at Elm Tree and New Dorp on Staten Island. The light-house is 33 feet in height, and 106 feet above the sea, and exhibits a fixed light, varied by a flash every two minutes, visible 16 miles, from N. 77° E. by the south, to S. 54° W.

ROMER BEACON.—This beacon is erected on the N. Western point of the Romer Sand, which sand forms the northern side of the Swash Channel, and south side of the East Channel. This beacon is built of granite 25 feet high, and 9 feet above water. It was originally placed to mark out the Swash Channel, but from the late survey of the channel it is evidently on the wrong end of the shoal to be of much service alone ; the iron beacon on the other end of the shoal having disappeared in the winter of '56—57. It bears from the light at Sandy Hook, about north, distant 2¼ miles ; and from the light at Fort Tomkins, S. by E., five and half miles.

THE EASTERN CHANNEL is that immediately to the north of the Swash Channel, and the sea entrance next north of Gedney's Channel. The East Bank forms the northern side of the channel, which is buoyed with spar-buoys, and has a general direction of N.W. by W. and S.E. by E. It should only be attempted in the day-time, as the buoys are the only guide.

Another channel called the Fourteen Feet Channel is to the northward of the south part of East Bank, but can only be used by coasters.

The tide sets fairly through the East Channel, and it is high water, full and change at 7h. 35m.

THE FALSE HOOK CHANNEL is the island which runs along the shores of Sandy Hook, having the False Hook Bank, and the Outer Middle Ground on its eastern side.

DIRECTIONS FOR ENTERING THE CHANNELS OF NEW YORK HARBOUR.

Vessels from the eastward of Jones' Beach, New Inlet, bound into Sandy Hook, should keep in 10 fathoms water, from whence the course is W., until they make Sandy Hook light, which can generally be seen, in fair weather, 15 miles.

GEDNEY'S CHANNEL.—Least water between the buoys 23 feet. Bring the light-house on Sandy Hook to bear about W. by S. ½ S., which will be in line with the black and white perpendicular striped "Channel Buoy," from which buoy the Romer Beacon will bear N.W. by W. ½ W., and when up with the buoy steer W. by N. ¼ N. about 1¾ mile, to where you will have the light-house on Sandy Hook bearing S.W. ½ W. With the flood tide steer half a point to the southward, and with the ebb half a point more to the northward than the fair course. When the light-house on the Hook has come to the above bearings, steer W. by S., with the main channel beacons, near Point Comfort, in line, nearly 4 miles. This course will lead between the Hook and the Flynn's Knoll, to a clear berth off the S.W. Spit, marked by a red buoy, No. 8½. Having run this distance, alter course and haul up to the northward to N. by E. ¼ E., and getting the Main Channel beacons at Conover in one, continue in that course for about 7 miles or nearly up to the Narrows. The two latter courses may be termed the Main Channel.

SOUTH CHANNEL.—Least water 22 feet. When off the Tavern at Long Branch, give the Jersey shore a berth of 3 miles ; you will then be in from 8 or 10 fathoms water ; steer N.N.W. ¼ W. until up with the black and white buoy striped perpendicularly, which lies in 22 feet water in the fairway of the South Channel, and also in line with the fairway of the Swash Channel. Steer from the buoy N.W. ¼ N., and then if ebb tide N.W. ¾ N., and if flood N.W. ¼ W. until the beacons near Point Comfort come in line, when proceed as directed above through the Gedney's Channel.

SWASH CHANNEL.—If bound through the Swash Channel, which requires some local knowledge, steer N.W. ¼ W. from the black and white striped buoy in the South Channel, with the Back range, on Staten, just open to northward, or with the beacon on the shore, at Elm Tree, on which the beacon at New Dorp, 1½ mile

farther inland. This course will take you between the buoys of the Swash Channel and to the S.W. of the Romer beacon into the Main Channel ; where you will get the Conover beacon in line as before directed.

When nearly up with the Narrows, bring the light on Robin's Reef N. by W. until nearly up with the light, then steer, to the N.E. towards the city.

Vessels caught off Rockaway Bar can steer S.W. by W. for the entrance of the Gedney's or South Channels.

It is high-water, on F. and C. days, at Sandy Hook, at 7h. 25m. ; but the stream of tide continues to set in, at the rate of 2 knots, until 9h. At New York, at Governor's Island, 8h. 19m. ; springs rise 5 feet 8 inches, neaps 3 feet 8 inches.

The vertical rise of the spring-tide is about 5½ feet ; but it is sometimes checked by the westerly or N.-westerly winds, so as to lower the water on the bar to 3¼ fathoms, Easterly or N.-easterly winds have frequently raised it to 5 fathoms.

The flood sets strongly to the westward from the S.W. Spit until above the Upper Middle, whence it runs up in the channel-course to the Narrows.

The tide during the last quarter-ebb, sets from the North or Hudson's River around Fort Point, and flows up the East River, at the rate of 3 knots; whence with a like velocity, it returns 2 hours before the North River high-water time. This affords great convenience to ships in shifting their berth from one river to the other.

FROM NEW YORK TO THE RIVER DELAWARE.

From the foot of the Highlands of Navesink, southward, the coast is low and level table-land ; then follows a considerable space of woodland, which has a remarkable appearance, and terminates about 7 leagues S. by W. ½ W., from the Navesink light-houses. After this begins an extensive lagoon, fronted by a narrow slip of low land, having an opening on the coast land in about lat. 39° 46′., commonly called Barnegat Inlet, leading into Barnegat Sound or Bay. The land continues in the same direction, S. by W. ½ W., full 16 leagues, to the inlet, and then turns S.W. ¾ S., 6 leagues to Long Beach north of Old Inlet and Little Egg Harbour. Along the shore the soundings are observed to decrease regularly from 12 to 5 and 4 fathoms. Barnegat Inlet is about 14 leagues to the southward of New York Harbour ; a shoal bar extends outward from its entrance, about 2 miles ; this is formed of mud, shells, and gravel. Its outer edge is steep-to, and you can sail along it in 6 fathoms, within a short distance of the outer breakers ; but during night or dark weather, it will not do to come into less than 10 fathoms. The soundings to the northward of the above depth are fine white sand, with very hard bottom.

Barnegat may easily be recognised in the day-time, even when the breakers are not seen, by a grove of wood 3 or 4 miles in length, directly within the Inlet, commonly called the Little Swamp ; with the N. end of this land abreast, you will be to the northward of Barnegat. Coming from the southward with a vessel, not drawing more than 10 feet water, and hauling in shore for the above woodland, you may, with the wind off the land, keep within a cable's length of the coast, until up with the Highlands, and proceed for the Harbour of New York as before directed.

BARNEGAT.—**Light.**—There is a light-house on the southern side of Barnegat Inlet, in lat. 39° 45′ 48″ and long. 74° 6′ 3″, painted, the upper part red, the lower half white, and the lantern black. The tower is 150 feet in height, and 165 feet above the sea, exhibiting a flashing light every 10 seconds, visible 20 miles.

The following buoys are passed in entering Barnegat Inlet :—

Sea Buoy is a white and black striped can, No. 1, in 18 feet water, light-house bearing W. by S. ; Bar Buoy N.W.

Bar Buoy is a white and black striped spar, No. 2, in 12 feet water, light-house bearing W.S.W. ; Channel Buoy N.W.

Channel Buoy is a white and black striped spar, No. 3, in 14 feet water, light-house bearing S.W.

Port side of Channel Buoy is a black spar, with a cross in 10 feet. Light-house S.S.W.

Bulkhead Buoy is a white and black striped spar, No. 5, in 13 feet water, light-house bearing S.E. by E.

South Bulkhead Buoy is a red spar, in 5 feet water, the light-house bearing E.S.E.

After making the Sea Buoy, steer N.W., quarter of a mile for the Bar Buoy, No. 2, which pass on either side, and continue on three-eighths of a mile to Channel Buoy No. 3 ; from which steer N.W. by N. for the point of the North Reach, and when within 100 yards of it, steer N.W. ½ N. for the black buoy with a cross on it, on the port side of the channel, leaving it on the port hand. Then steer W. three-quarters of a mile for Bulkhead Buoy, No. 5 ; thence S.S.E. for buoy No. 6, which is on a wreck, to which you must give a good berth. Leave it on either hand, and steer for South Bulkhead Buoy. You have then good anchoring ground all the way up to the westward to Point of Beach.

Beyond the elbow of Barnegat Reach the coast bends S.W, ½ S., 9 leagues to Absecum Inlet, then in S.-westerly direction 12 leagues, until it reaches Cape May, which is the northern point of entrance to the Delaware, a distance of 22 leagues ; the land is generally low and broken, being composed of several islets and inlets ; the latter have their entrances commonly obstructed by a sandy bar, extending in some instances a considerable way off. Like the soundings to the northward, the depths gradually decrease as you near the land.

LITTLE EGG HARBOUR.—The New Inlet of Little Egg Harbour is in latitude 39° 28′ and formed by several low islets and salt marshes, and can only be recommended in cases of emergency, the numerous shoals about its entrance being very dangerous; yet during winter, when it frequently happens that vessels cannot enter New York or the Delaware through the violence of N.W. winds, sooner than be driven out into the Gulf Stream, it may be useful to know there is a harbour at hand, if they can only get there in safety.

Light.—The light-house, erected for the guidance to Little Egg Harbour, is on Tucker's Beach, near the entrance of the Harbour, in latitude 39° 30′ 18″, and longitude 74° 16′ 48″, the tower is 44 feet in height and 50 feet above the sea, and coloured red. It exhibits a fixed light, varied by flashes every minute, visible 12 miles between N° 18′ 30″ W. by the N.E., and S. to N. 63° 30′ W. The keeper's dwelling is also coloured red. Vessels making this light should not steer to the north of N.E. until they make Barnegat light. This notice is deemed necessary, as the land at Barnegat runs nearly in a N. by E. direction, and to one not acquainted both lights being of the same character, the Tucker's Beach light, would be apt to make him haul to the northward too soon.

The shoals appear to form three separate channels—the Sod, the Middle Channel, and the South Channel; of these the Sod, which lies next to the shore, on the N. side appears to be the best ; this lies in a S.W. ½ S. direction, the Middle Channel W.N.W., and the South Channel in a N.N.W. direction.

On the northern side is Tucker's Beach, with a remarkable house having two chimneys, and a cluster of three single trees to the N.E. and a small house to the S.W. When advanced so far as this part, you will make the sea-buoy, pointing out the entrance. This is a black and white striped spherical buoy, marked No. 1, with an 8 feet stem, in 18 feet water, Tucker's Beach boarding house bearing N. by W. ; Bar buoy of the East Channel S.W.

Directions.—Sod Channel.—Coasters bound to the northward, having passed Little Egg Harbour, and caught by a N.-easter, being then unable to make

Sandy Hook, will generally run for this harbour. In running down within sight of the land, pass the house near the point of Long Beach, giving the breakers off the Old Inlet, (which is the N. of Tucker's Beach) a berth of half a mile, and keeping in 24 feet water, until the boarding house on Tucker's Island bears N.W. by W.

The boarding house on Tucker's Island is distinguished from that on Long Beach by having three small trees close to the northward of it, and a thick undergrowth on the hillocks on the northern extremity of the island ; whereas the sand hills in the neighbourhood of the boarding house on Long Beach are bare.

Being in 24 feet water, fine black sand, with the boarding house on Tucker's Island bearing N.W. by W., steer W. by S. for the outer buoy near the middle of the entrance of Sod Channel.

While abreast of Tucker's Island, and before reaching the outer buoy, there will not be much tide, and the least water will be 10 feet at low water. When up with the outer buoy, the S.W. point of Tucker's Island being 900 feet distant to the westward, steer S.W. ½ S. for the middle buoy, keeping on the outside. Strong tide will here be met ; the flood-tide setting over the shoal off the point of Sod, and the ebb setting over towards the Round Shoal, for which allowance must be made. Turn the middle buoy in 19 feet water, and steer for the inner buoy. With a scant wind and ebb-tide, vessels will be obliged to anchor here, or even before reaching this point. With a change of tide a better anchorage will be found farther up, between Anchoring Island and the marsh to the northward. This part of the harbour from the N.W. extremity of Anchoring Island to Hatfield's Store, is 1¼ mile long and a quarter of a mile broad.

Vessels coming from the southward, and wishing to enter by the Sod Channel, will bring the boarding house on Tucker's Island to bear N. ½ W., and steer for it, giving the Round Shoal a berth. When a hillock on the S. end of the island bears W. ½ N., haul up W. by S. for the outer buoy, and afterwards follow the directions given before.

South Channel.—Vessels coming from the southward will give the Brigantine Shoals a good berth, keeping in 4 fathoms water, until the northernmost house on Brigantine Beach bears N.W. by N., then steer N. by W. ¼ W. if the weather be clear. Hatfield's Store, on the marsh, will be seen ahead 4½ miles distant ; keep on this course until the northern house on the Brigantine Beach bears N.W. by W. ¾ W., when they will be between the breakers on the S. Point of the Round Shoal, and those on the beach ; then haul up to the N.E. ¾ N., and continue on that course three-quarters of a mile, until the northern house on Brigantine Beach bears W. and the S.E. point of the sand-hillock, on the S. end of Tucker's Island, bears N. ¾ W.; haul in then N. ¾ W., and steer for this hillock until nearly up with the middle buoy, after which, proceed as before directed.

High water, full and change, at Little Egg Harbour at 7h. 10m.; mean rise of tide 4 feet.

In Little Egg Harbour there are about 15 feet at high water.

Besides the Sea Buoy already noticed, the following buoys are passed in entering Little Egg Harbour by the East Channel :—

Bar Buoy of East Channel is a black and white striped can, No. 2, in 11 feet water, with light-house bearing N. by E.; East Channel Buoy W.N.W.

1st East Channel Buoy is a striped black and white can, No. 3, in 13 feet water, light-house N.N.E. ¼ N.; buoy No. 4, W.N.W.

2nd East Channel Buoy is a black and white striped can, No. 4, in 18 feet water, light-house bearing N.E. by N. ; buoy No. 5, N. by W.

East and North Channel Buoy is a black and white striped can, No. 5, in 20 feet water, light-house bearing N.E. by E. ½ E. ; buoy No. 6, N. by W.

Main Channel buoy is black and white, striped spar, No. 6 light-house bearing N.E. by E.; Willet's House N. by W.

After making the Sea Buoy, steer S.W., half a mile for Bar Buoy No. 2, then W.N.W., one mile for No. 4, passing, when halfway, buoy No. 3; then steer N. by W., three-quarters of a mile for No. 5, and continue on three-quarters of a mile to Main Channel Buoy, No. 6; thence to Willet's House, until near Anchoring Island, and giving the east point of the same a berth of 200 yards, steer N. by W. into the harbour.

To enter by the North Channel, when up with the Sea Buoy, No. 1, as in the East Channel, steer N.W., three-quarters of a mile for buoy No. 1½, then W.N.W., half a mile for buoy, No. 5, and then as above.

Light.—On the south side of Absecum, in latitude 39° 21′ 55″, and longitude 74° 24′ 32″ a light-house is erected of bricks, 159 feet in height, and 167 feet above the sea; the tower from the base to 50 feet up is white, middle 50 feet red, and upper third, including lantern, white. It exhibits a fixed light, visible 20 miles, between N. 38° by the east to S. 47° W.

ABSECUM INLET.—During the late survey of the entrance to this inlet, a shoal of 11 feet was discovered. It is called the Round Shoal, and bears from the light-house S.E. ½ E., 1⅝ mile. Vessels not bound into Absecum should give the shore a berth of 3 miles. The course to run parallel with the shore is N.E. ½ E.

There is 8 feet water on Absecum Bar. To run in, bring the light-house to bear N. ½ E., and run for it, which brings you up with the outer buoy of the bar, which is distant 1¼ mile S. ¼ W. from the light. Keep that course until up with the second buoy, when you steer N. by E. ¼ E. for the outer buoy, until past the light-house.

The following buoys are passed in entering Absecum Inlet :—

Sea Buoy is a white and black spherical buoy, No. 1, with a 6 feet stem, in 15 feet water, Absecum light-house bearing W. by S.; Holdzkom's House (Brigantine Beach) N.E. by N.

First Channel Buoy is a white and black striped can, No. 2 in 9 feet water, Holdzkom's House bearing N.E. ½ E., Absecum light-house W.S.W.

Second Channel Buoy is a black and white striped can No. 3, in 9 feet water, Holdzkom's House bearing N.E. by E., Absecum light-house S.W. by W.

Harbour Buoy is a black and white striped spar, No. 4, in 10 feet, Horner's House bearing W. by S., Absecum light-house S.W. ¼ S.

When up with the Sea Buoy, No. 1 steer due west five-eighths of a mile, for buoy No. 3, passing No. 2, about midway, then W.N.W., quarter of a mile for No. 4, then south, until you can clear the north beach about 100 yards, and then follow up the beach, steering N.N.W., and anchor at discretion.

GREAT EGG HARBOUR lies about 8 miles to the S.-westward of Absecum, and has only 12 feet water in it at H.W. springs. Inland of Great Egg Harbour is a grove, called the Great Swamp Trees, by which this place may be readily known, that is if the trees have not been felled at the time these directions may be used.

The following can buoys, white and black in horizontal stripes, have been placed to mark the channel at Great Egg Harbour :—

No. 1 buoy is in 20 feet water. From it the north point of Peak's Beach bears N.W. by W. No. 2 buoy is in 15 feet water. No. 3 buoy is in 42 feet water; from it No. 2 buoy bears S. by E. No. 4 buoy is in 22 feet water; from it No. 3 buoy bears E. by N. No. 5 buoy is in 20 ft. water; from it the hotel (the northern house) on Somer's Point bears N.W.

To enter the inlet steer the following courses, viz :—

From No. 1 to No. 2 buoy N.W. ¼ N.; from No. 2 to No. 3 buoy, N. by W.; from

No. 3 to No. 4 buoy W. by S.; from No. ½ to No. 5 buoy W. by S. ½ S.; from No. 5 buoy N.W. until halfway to Somer's Point, then keep close to the north shore to clear a wreck that lies near the port side of the channel.

Should the land be made about Absecum, when abreast of this part, in from 6 to 15 fathoms, the soundings will be white and black sand, with occasional bits of shells; and you may discover your exact position by the Great Swamp Trees, before mentioned; and having passed Great Egg Harbour, at the distance of about 4 or 5 miles, you may pursue a S.W. course, which will carry you towards Cape May, inside the Five Fathom Bank, and to the eastward of M'Cries Shoal, which you must round to the southward if bound to the Delaware.

In running thus for the cape, you will pass 5 inlets; these are Corsons, Townsend, Hereford, Turtle Gut, and Coldspring; each of which has a bar at its entrance, and only fit for small craft.

Hereford Inlet is frequented by the pilot-vessels there being no other shelter for them to the northward, until they reach Absecum or Egg Harbour.

When sailing between New York and the Delaware, with a N.-westerly wind, and generally clear weather, keep no farther off than 10 fathoms; the nearer in-shore the stronger is the current, which averages one mile an hour, the flood setting W. by S., and the ebb E. by N.; but you will have no tide farther off than in 8 or 9 fathoms.

If turning with a westerly wind, do not stand farther off than 18 or 20 fathoms; but you may venture in-shore into 6 fathoms, until off the entrance of Hereford Inlet, or about 2 leagues to the N.-eastward of Cape May.

FIVE FATHOM BANK. Vessels bound into the Delaware, coming from the northward, or having fallen to the northward of Cape Henlopen, should be careful not to approach nearer than 12 fathoms water, until they have got into the latitude of the said cape, in order to avoid the shoal called the Five Fathom Bank to the southward of which a light-vessel is placed. The centre of the shoalest ground, on which is found 12 feet water, bears N. by W. ½ W. from the light-ship, distant 5 miles. It extends N. by E. ½ E. and S. by W. ½ W. ¾ of a mile, and is half a mile in breadth, and bold on its eastern edge, as there are 5 fathoms half a mile to the eastward of the shoal water. On its N.E. edge is, or was, a black nun-buoy, marked F.F., in 6 fathoms.

The Five Fathom Bank, having on it 4 and 5 fathoms is 9 miles long in a N. and S. direction, and has an average breadth of 1½ mile in a E. and W. direction. There is a passage inside of this shoal, by taking your soundings from the land, in 6 or 7 fathoms, but strangers should not attempt it, especially in large vessels.

Light-vessel.—This vessel is moored nearly 5 miles to the southward of the Five Fathom Bank. Her position is in latitude 38° 48′ 20″ N.; longitudo 74° 36′ 10″ W., with Cape Henlopen light bearing west, 23 miles distant; she is painted straw colour, with "Five Fathom Bank" on each side, and exhibits two fixed lights at the respective heights of 45 ft. and 40 ft. above the sea, visible about 11 miles each. A steam fog-signal. Two hoop-iron day-marks, one on each mast. Vessels entering Delaware Bay should pass southward and eastward of the lightship.

M'CRIE'S SHOAL.—This shoal, which has only 17 ft. water on it, lies 7 miles S.E. ¼ S. from Cape May light-house; W. ¼ N., distant 1½ mile, there are 18 feet, and to the E.N.E., about the same distance, 20 feet will be found on a small spot. A red can buoy is moored in about 5 fathoms, a short distance to the S.W. of the shoal part of the bank. Another shoal lies 15 miles S.E. by E. ¼ E. from Cape Henlopen light-house, with 4¼ fathoms upon it. S.E. 1½ mile from Congress Hall there is a shoal, a mile in extent, on which there are only 8 feet water; it is called the Ephs Shoal, with a can buoy at each end. There are 3½ fathoms inside of it.

DELAWARE BAY and RIVER.—The entrance to the Delaware is between the capes of May and Henlopen, bearing from each other S.W. ¾ S. and N.E. ¾ N.,

distant 10 miles. Both capes are distinguished by a light-house. There is a large space covered by overfalls, off Cape May, extending 6 miles southward of the light-house, with only from 5 to 15 feet on them. There is a narrow channel between these shoals and the cape, leading into the river. The main channel is to the southward of these overfalls, between them and Cape Henlopen, and is full 4 miles wide.

BREAKWATER.—The Government of the United States have constructed an extensive breakwater within Cape Henlopen, similar to the one in Plymouth Sound, forming a safe artificial harbour within the cape. To the westward of this is another similar work, about 500 yards in length, and built so as to protect the harbour from the ice, and called the Ice Breakwater.

Light.—On the W. end of the main breakwater there is a light-house erected on the keeper's dwelling, 47 feet above the level of the sea. The light-house is painted white, and is intended as a harbour light exhibiting a flash every 45 seconds, being visible 11 miles. A fog bell is struck at intervals of 10 seconds. The harbour thus formed by these breakwaters is of the greatest importance to vessels entering the Delaware, as there are not any natural harbours between Henlopen and Philadelphia, a distance of about 24 leagues.

Pilots.—A vessel off the mouth of the Delaware, requiring a pilot, will, upon hoisting a jack at the fore-topmast-head, obtain one as soon as he can put off. Those who are to be depended upon are furnished with a certificate from the Board of Wardens at Philadelphia. The risk in entering will be much lessened if such signal is made as soon as the light-house is discerned. A code of signals is established at the light-house; by this code the signal will be answered, and the pilot will always endeavour to meet the vessels off the light-house. It has frequently happened that mariners have not made the signals until abreast of the light-house, and, in that case, have been obliged to lie-to, occasioning unnecessary delay, and sometimes incurring danger. It is to be observed, that the pilots are generally to be found cruising about, and when they are not, the above caution is of importance.

DANGERS OUTSIDE THE CAPES.—Five-Fathom Bank lies E. by S., $15\frac{1}{3}$ miles from Cape May light-house; least water 12 feet.

M'Crie's Shoal lies S.E. $\frac{1}{4}$ S. 7 miles from Cape May light-house; least water 17 feet.

Eph's Shoal lies E.S.E., 3 miles from Cape May light-house, and S.E. $\frac{1}{2}$ S., $1\frac{1}{4}$ mile from Congress Hall; least water 5 feet.

Overfall.—Southern edge, marked by a red can buoy, N.E. $\frac{1}{4}$ E., 4 miles from Cape Henlopen light-house, and S.W. $\frac{3}{4}$ S., 6 miles from Cape May light-house: broken ground to within a mile of Cape May and 4 miles of Cape Henlopen light-house; between the buoy and Cape May many shoal spots of 4 to 6 feet water, and in several places breakers and strong tide-rips.

Hen and Chickens Shoal lies immediately to the S.-eastward of Cape Henlopen, the southern end of which is $3\frac{1}{2}$ miles from the light-house. This shoal lies in a S.S.E. and N.N.W. direction $3\frac{1}{4}$ miles in length, and narrow, having 2 and 3 fathoms on its southern end, but the shallowest part is the northern, inside of which, between it and Cape Henlopen, there is a narrow passage. Southern point lies S.E. $\frac{1}{2}$ S.; northern point E.S.E. from Henlopen light-house, distant half a mile.

DANGERS INSIDE THE CAPES.—Round or E.N.E. shoal lies W. $\frac{3}{4}$ S., $2\frac{1}{2}$ miles from Cape May light-house; least water 3 feet.

Crow Shoal, S. point lies W. by N. $1\frac{1}{3}$ mile from Cape May light-house, and extends 4 miles N. nearly parallel to the shore; least water 7 feet.

The Shears S.-eastern point, marked by a buoy, lies N. by W. $\frac{1}{4}$ W., 2 miles from Cape Henlopen light-house; least water 6 feet.

Brown Shoal southern edge lies W. $\frac{1}{4}$ N., $7\frac{1}{4}$ miles from Cape May light-house; least water 8 feet; southern end marked by a buoy.

Brandywine Shoal southern edge lies W.N.W. northerly, 7 miles from Cape May light-house ; least water 1 foot.

For the buoys on the shoals, see below.

LIGHTS AT THE ENTRANCE OF THE RIVER.—Light-Vessel near Five-Fathom Bank bears S.E. by E. ½ E. 18 miles from Cape May light-house, East, 23 miles from Cape Henlopen and S. by E. ½ E., about five miles from the (see p. 38) shoal part of bank.

Cape Henlopen Light-house, in lat. 38° 46′ 38″ and long. 75° 4′ 43″. This light-house is coloured white, with black lantern, 82 feet in height, 128 feet above the level of the sea, and exhibits a fixed light, visible 18 miles between N. 40° W. by the east ; to S. 6° E. There are large white sand-hills close to this light-house. It is 21 miles from the Five Fathom light-vessel.

The Beacon Light on Cape Henlopen is a screw-pile structure, coloured white situate about a mile N.W. from the Main Light. The building is 45 feet above the sea ; a fixed light, visible 11 miles, between N. 52° 30′ W. by the east to S. 5° E. A first-class steam siren is established 400 yards S.S.W. from the Beacon light-house ; sounded in thick or foggy weather.

The Beacon Light on the Breakwater, as previously noticed, exhibits a flashing light (see page 39).

Cape May Light-house, in lat. 38° 55′ 50″ and long. 74° 57′ 16″. This light-house is of a grey colour, 145 feet in height, and 152 feet above the sea, exhibiting a revolving light every half minute, visible 20 miles all round.

Brandywine Shoal.—An iron screw-pile tower, painted red, 46 feet above the sea, showing a fixed light, visible 11 miles, and illuminating the entire horizon. Also a screw pile ice-breaker. This structure is erected on the southern end of the shoal in lat. 38° 59′ 7″ and long. 75° 6′ 28″. A bell is struck 5 blows at intervals of 6 seconds, and then a pause of 30 seconds.

Fourteen-Foot light-vessel is moored in 4½ fathoms 2½ cables eastward of Fourteen-foot bank. The lights are two fixed white lights, visible 10 miles. The day marks at each masthead are red. This light-vessel is nearly midway between Brandywine and Cross Ledge lights.

Cross Ledge Light-house in lat. 39° 9′ 30° N., long. 75° 14′ 30″ W. This light-house is about half a mile within the southern extremity of the shoal. The light is a fixed white light, varied by flashes every quarter of a minute, and visible 12 miles. A fog bell is sounded during thick or foggy weather.

Buoys between the Capes of Delaware and at Entrance, as they are passed in entering Delaware Bay and River.

Vessels entering, keep to the port of all the red buoys, and to the starboard of the black, and either side of cross striped red and black. Black and white perpendicular stripes mark a channel buoy in best water.

Five-fathom bank, N.E. part, nun-buoy, black, marked F.F. 36 feet—S. end of Hen and Chickens, No. 1, spar-buoy, red and black horizontal stripes, 25 feet—M'Crie's Shoal, No. 2, (nun-buoy (red) 5 fathoms—Tail of the Shears, No. 3, nun-buoy (black), 3 fathoms—S.W. point of Overfalls, No. 4, nun-buoy, with staff and triangle, red, 40 feet—Buoy of the Brown, No. 5, can-buoy, black, 6 fathoms—Boyd's Shoal, No. 7, can-buoy, black, 20 feet—Brandywine Shoal, N.W. part, No. 6, nun-buoy with flag, red, 6 fathoms.

The foregoing are the outermost buoys and lights at the entrance of the Delaware, but the buoys are liable to be at times driven from their stations by casualties or altered in position according to circumstances. Such being the case, together with the intricacies of the river navigation, we refrain from any further description, as no person would be so imprudent to attempt the navigation of the River Delaware

unless well acquainted with its various channels and shoals, and the different sets of the tides; indeed directions, however descriptive, would be of little service without the aid of the very large scale Charts of the River. We therefore urge that it is requisite for a stranger to take a pilot.

SET OF THE TIDES WITHIN THE CAPES.—The first quarter-flood sets W.N.W.; second to last quarter N.N.W. First quarter ebb E.S.E.; second to last quarter ebb, S.S.E. With spring tides the vertical rise is from 6 to 7 feet, neap tides 4½ to 5 feet; but they are varied by the winds.

It is H.W. on the F. and C. days of the moon, as follows:—At Cape May 8h. 19m.; at Cape Henlopen 8h. 0m.; at Bombay Hook 10h. 0m.; at Reedy Island 11h. 0m.; at Newcastle 11h. 16m.; at Chester 1h. 0min.; and at Philadelphia 1h. 22m. The variation off the mouth of the Delaware is about 3½° westerly.

DIRECTIONS TO ENTER THE BAY FROM THE EASTWARD THROUGH THE MAIN SHIP CHANNEL.

Having the light-vessel near the Five Fathom Bank bearing N., distant 1½ mile, steer for Cape Henlopen light-house W. ⅓ N., the soundings on the line varying from 7 to 9 fathoms. When they deepen to 10 fathoms or over, Henlopen light-house 3½ miles distant, steer N.W. to bring Henlopen light-house and the beacon on the cape in one, being careful, particularly in light winds and on the flood, which sets to the westward, not to cross much to the westward of the range, the Shears Shoal being near to the westward. Steer up the bay on this range (the light-house and beacon in one), which passes to the eastward of the buoy of the Brown; soundings shoaling gradually from 15 to 8 fathoms, until the screw pile light-house on the Brandywine Shoal bears N. by W., when steer N.N.W. ¼ W. 13 miles to abreast of the light-house on the Cross Ledge, thus passing about ½ a mile to the westward of the Brandywine Shoal, and close to the light-vessel marking the Fourteen feet shoal, which shows two lights, and should be passed to the eastward.

BOUND INTO BREAKWATER HARBOUR FROM THE SOUTHWARD.—Pass the Hen and Chickens at a safe distance, 2 miles from the shore, then haul in to the shore, keeping close to Cape Henlopen, which is bold and convenient.

FROM THE EASTWARD.—Bring Cape Henlopen light-house to bear W. ¾ S., and stand in; enter the harbour at either end, or between the Breakwater and Ice Breakwater, according to the wind and tide, and to the berth selected. Do not anchor in the gap, as the best anchorage is close to the Main-work Breakwater light-house, bearing N. by W. The holding ground is excellent in every part of the harbour.

Chains and anchors can be procured on the Breakwater, and ship's stores generally at the town of Lewes.

THE FOLLOWING DIRECTIONS FOR ENTERING DELAWARE BAY ARE BY LIEUT. R. BACHE, U.S. NAVY.

RICORD'S CHANNEL.—Vessels drawing 15 feet water can pass through this channel at ordinary low water, smooth sea.

BLUNT'S CHANNEL not yet buoyed.

THROUGH CHANNEL TO BREAKWATER.—Vessels drawing 16 feet can pass through this channel at ordinary low water, smooth sea.

The rise of tide may be estimated at 5 feet. Strong tides running, an allowance of two points must be made in the course steered, crossing the direction of the tides. The lead is a guide. The shoals, although pretty steep-to, can be avoided by constant and true soundings.

When off the boarding-houses on Cape Island in the Coasters, or Cape May

Channel, buoy No. 1, on Eph's Shoal will be seen W. by N. ½ N. ; steer for it, leaving it close on board on starboard hand when passing. When up with buoy No. 1, buoys Nos. 2, 3, 4, 5, and 6, in clear weather will be in sight.

To pass through the Through Channel to Breakwater.—This channel is narrow ; on the S.E. is a shoal, with 7 feet water upon it, and the Round, or E.N.E. shoal is to the northward, and has 4 feet water upon it, and the breakers show plainly in any breeze. When abreast of No. 1 buoy on Eph's Shoal, stand W. ¾ N. towards buoy No. 3, keeping it open on the port bow a point, and gradually hauling up for it. When up with No. 3, leave it on the starboard hand, and steer S.W. by S. for No. 2, which leave close on board on starboard hand, and continue on S.W. by S. for Breakwater.

To pass through Ricord's Channel.—This channel lies between Crow and the Mummy Shoals ; the Crow Shoal having on it 7 feet water and the Mummy Shoal 6 feet water. After passing buoy No. 4, it is a good beating channel.

From buoy No. 1, steer N.W. ¾ W. for No. 4, which will leave No. 1 on the starboard hand, at a short distance, and steer N.N.W., westerly, for No. 5, which pass on either hand and haul up N.W. ½ W., westerly, for No. 6, which pass on either hand, and shape your course W. ½ N. which brings you between the buoy of the Brown and light-house on the Brandywine Shoal, in the Main Ship Channel.

CITY OF PHILADELPHIA is situate on the western bank of the Delaware, which is here a mile broad, being both healthy and pleasant, and a place of great opulence ; its commerce is very extensive, and its wharves are most commodiously constructed, the principal one being 200 feet wide, with sufficient water for ships of 500 tons to lie alongside of it. The warehouses are numerous ; and there are commodious docks for ship-building ; the streets are broad, and well lighted ; and the markets are abundantly supplied.

The houses are chiefly built of brick, plain, and three stories high ; but the public edifices are chiefly of stone, handsomely ornamented. The United States Bank, the National Mint, and the ten bridges deserve notice. Literary and benevolent institutions are numerous.

A great number of fine ships belong to this port ; and the navigation of the river can be entered by a man-of-war, as far as the city itself while sloops and smaller vessels may proceed much farther up.

FINIS.

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FOR

THE EAST COAST

OF

NORTH AMERICA,

FROM

THE DELAWARE TO THE GULF OF FLORIDA, &c.

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N.B —Alterations and additional information will be given in supplementary pages of ADDENDA, *as occasion may require; these corrections are also transferred at once to the Chart which this book is intended to accompany, so that it may sometimes happen the Chart has the latest information.*

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CONTENTS.

Page.

General Remarks 1

From the Delaware to the Entrance of the Chesapeake 2

Entrance to Chesapeake Bay 9

From Cape Henry and Lynn Haven Bay to York River 10

From Cape Henry to New Point Comfort 11

From New Point Comfort to Rappahannock and Potomac Rivers 11

Potomac River; Washington 12

From Cape Henry to Cape Hatteras 15

Cape Hatteras; Cape Hatteras Shoals 17

From Cape Hatteras to Cape Lookout 19

From Cape Lookout to Cape Fear 20

From Cape Fear to Charleston 23

Winds on the Coast of South Carolina 26

From Charleston Bar to the Entrance of Port Royal 27

From Port Royal to Savannah 29

From Savannah to St. Mary's River 31

From St. Mary's River to St. Augustine 34

Remarks on the Passage from Europe to St. Augustine 36

Passage from St. Augustine to New York; Setting of the tide along shore from New York to St. Augustine 36

From St. Augustine to Cape Florida 37

Cape Florida and Florida Reef 39

The Tortugas Banks 46

The Western Coast of East Florida 47

Sailing through the Gulf of Florida 55

Time of High Water on Full and Change Days 56

INDEX.

	PAGE.
Albemarle Sound	18
Altamaha Sound	32
Annapolis	14
Apalachicola	52
Appalachee Bay	52
Assateague Island	3, 4
Baltimore	15
Beaufort	20
Black Fish Bank	3
Body's Island	16
Brunswick Harbour	32
Bull River	28
Bull's Bay	24
Calibogue Sound	30
Canaveral, Cape	37
Cape Charles	5
Cape Henry	6
Carysfort Reef and Light	40
Cay West	40, 42, 44
Cedar Cays	49
Charleston	25
Charlotte Harbour	47
Chesapeake Bay	9
Chincoteague Shoals	3, 4
Combahee	27
Cumberland Sound	33
Darien	31
Doboy Inlet	31
Edisto Inlet	27
Fenwick Island Shoal	2
Fernandina	34
Florida Cape and Reefs	39
Frying Pan Shoals	21
Gaskin Bank	28
Georgetown Harbour	23
Gilbert Bar	38
Gull, Great and Little Banks	3
Hampton Roads	6
Hatteras Cape	16
Hen and Chickens	2
Henlopen Cape	2
Henry Cape	6
Hilsboro' Inlet	38
Hog Island	4
Isle of Wight Shoal	3
James River	6
Jupiter Inlet	38
Lookout Cape	19
Lynn Haven Bay	10
Marquesas Cays	45
Matanzas Inlet	37
Mosquito Inlet	37
Nassau Bar and River	34
New Inlet of Cape Fear	21
New River Inlet	38
Norfolk	6
Ocilla River	51
Ocracoke Inlet	19
Ossabaw Sound	31
Pamlico Sound	18
Paramore Bank	4
Patuxent River	13
Porpoise Bank	4
Port Royal Harbour	28
Potomac River	12
Rappahannock River	11
Rattlesnake Shoal	25
Romain, Cape	24
Romano, Cape	47
Sable, Cape	47
Sapelo Inlet	31
Savannah	29
Severn River	14
Shark Shoal	4
Sinepuxent Shoals	3
Smith's Island Shoal	4
St. Andrew's Sound	33
St. Augustine	35
St. Catherine's Sound	31
St. George's Sound	52
St. Helena Sound	27
St. John's River	33
St. Mark's River	51
St. Mary's River	33
St. Simon's Sound	32
Stono Inlet	27
Suwanee River	50
Tampa Bay	48
Tortugas Banks	46
Tortugas Islands	42
Turtle Harbour	43
Tybee Inlet	29
Washington	12
Wassaw Sound	31
Wilmington	22
Wimble Shoals	16
Winter Quarter Shoal	3
York River	10

SAILING DIRECTIONS

FOR THE

COASTS, HARBOURS, AND ISLANDS

OF

NORTH AMERICA,

FROM

THE DELAWARE TO THE GULF OF FLORIDA, &c.

NOTE.—In this work the Soundings are given at LOW WATER, Spring tides ; the Bearings and Courses are Magnetic, or by Compass, except where marked (true) ; and the Distances are in Nautical Miles of 60 to a Degree. A Cable's length equal to 100 fathoms. Longitude from Greenwich, Westerly. Fog Signals are established, or are being constructed near the principal Light-houses and Points of the coast.

GENERAL REMARKS.—Mariners bound from the eastward and steering for the coast of North America, anywhere between the Delaware and Chesapeake, may readily discover their approach towards the land by the different temperature of the sea, long before they meet with soundings ; for in crossing the Gulf Stream it will be found to have increased in heat at least 5° of the thermometer, and on leaving it, or getting to the westward, it will sensibly become 5° colder, and a further fall of 5° will give correct indication of soundings, as the water over banks and shallows is always colder than in the deep and open sea.

Another object to ascertain proximity to this coast anywhere between Long Island and Cape Hatteras, is the GULF WEED ; which, at the outer edge of the stream, will be seen in large clusters ; but, on advancing towards the land, they become less frequent and considerably smaller. Within the stream the weeds are few, and the water of a dark green or bluish colour.

It is of considerable importance that the mariner who trades to and from Europe should be acquainted with the Gulf Stream : for by keeping within it, when bound north-eastward, he may considerably expedite his passage ; and by avoiding it, he will do the same, when bound contrary, or to the westward. Vessels taking advantage of the counter-southern-current, which constantly sets within the western edge of the stream, will much accelerate their voyage. Thus, in proceeding from Halifax to Georgia, with the wind ahead, let the mariner stand

out for the stream ; and when he finds the water getting warmer, heave about, and incline towards land, the edge of soundings being always known by the returning coldness of the sea ; then steer out again until he perceives the approaching heat, and so on alternately, by which means the run will be considerably shortened : but, on the contrary, if bound from Georgia northward, run out to the middle of the stream, and make the most of the current.

In crossing the stream, every exertion should be made to get over it as speedily as possible, lest a vessel be carried out of her course.

When bound to the Chesapeake from the ocean, the Gulf Stream is generally crossed from the south-eastward, in about lat. 35° 20′, a little to the northward of Cape Hatteras. Here the temperature will be found as high as 80° in the months of August and September.

The outer edge of soundings is generally very steep, and in approaching the Delaware the depths are very irregular. The sea, within soundings, becomes of a dark and muddy appearance.

FROM THE DELAWARE TO THE ENTRANCE OF THE CHESAPEAKE.

Variation 5° to 3¼° westerly, increasing 4′ annually.

The description of the Capes of Delaware and the adjacent shoals, with the directions for entering the bay are given in a former volume of Directions for the Coast of America, from Cape Cod to Philadelphia : the directions in this volume re-commence at Cape Henlopen, and thence continue southward.

Between the entrance of the Delaware and that of the Chesapeake, the shores are generally very low, and broken into islands and inlets, which are obstructed and encompassed by numerous shoals ; these will be noticed in their respective places.

HEN AND CHICKENS.—When leaving the Delaware and passing Cape Henlopen, bound towards the Chesapeake, the first shoal met with will be the Hen and Chickens. On this shoal there are 5 ft. water in places. On the southern point of the shoal, there are only 13 ft. bearing S.E. by S., 2½ miles from Cape Henlopen light-house. The screw Beacon on the cape, in range with the light-house on the breakwater, marks the edge of the shoal, On the southern part is a spar buoy, marked red and black horizontal stripes, No. 1, in 25 ft. water. Coasters can pass inside the shoal, where there is a channel of 4½ to 5 fms. parallel to the shore, and follow the beach round the cape.

CAPE HENLOPEN TO CAPE CHARLES.—The coast to the southward of Cape Henlopen is studded with shoals, lying at the distance of 3 to 6 miles from the nearest land. The Cap Shoal, on which there are 4½ fms., lies S.E. by S., 6½ miles from Cape Henlopen.

S.E. by E. ¼ E., 14½ miles from Cape Henlopen, and E. by N. ¼ N., 12 miles from Indian River Inlet, is a small shoal of 4¼ fms. This shoal is the farthest out to sea of the dangers of the River Delaware, southward of the capes, and should be guarded against by large vessels, especially at low water. The Indian Shoal of 3 fms., formerly reported within 5 miles of Indian River Inlet, does not appear to exist, and it is hardly probable that the above spot of 4¼ fms. can have been laid down for such, seeing that there is too great a distance between their positions.

FENWICK ISLAND SHOAL.—The centre of this shoal is in lat. 38° 27′ 30″ N. and long. 74° 56′ 9″ W. It is in length about 2 miles S.W. to N.E., and has 15 ft. water on its shoalest part. It bears S.E. by S. ¼ S., 11 miles distant from Indian River Inlet, and E. ¼ S. to E. ¾ N., 5 miles from Fenwick Island light-house. On approaching the shoal from seaward the soundings suddenly decrease from 10 to 2½ fms. ; and on the west side of the shoal there are 10 fms., at the distance of

about 2 miles. This part of the shoal appears to be extending, as does also the northern portion.

Bell Boat and Buoy.—Off the N.E. part of Fenwick's Shoal an iron bell-boat is moored in 10 fms. water, close to the outer edge of the shoal, with Fenwick Island light-house bearing W. ¾ S., distant 6¾ miles. The hull is painted black, the mast red, and the bell is rung by the action of the sea. A buoy is moored on this shoal, in 2½ fms., painted in horizontal stripes.

Light.—On Fenwick Island, 20 miles to the south of Cape Henlopen, in lat. 38° 27′ 9″ N. and long. 75° 3′ W., a white light-house (with black lantern and watch-room below it) is 82 ft. in height, and 86 ft. above the sea, showing a fixed light, varied by a flash every two minutes, and visible 15 miles.

ISLE OF WIGHT SHOAL.—On this shoal there are but 3 fms. water, it bears S. ½ W., 4½ miles from the centre of Fenwick Island Shoal; east from the Isle of Wight Woods, and is nearly 6½ miles from the beach. Within a mile of the shoal there are 10 fms. water on either side. This shoal is also marked by a horizontally striped buoy.

About midway of the above two shoals there is a spot with 3½ fms. water upon it.

LITTLE GULL BANK lies S.W. ½ W., 7 miles west from the Isle of Wight shoal, and has 12 ft. water on it.

GREAT GULL BANK lies 10 miles S.W. ¾ S. from the Isle of Wight shoal, and has 3½ fms. on it.

THE SINEPUXENT SHOALS are several knolls near the shore, inside of Fenwick's Island Shoal, having 3½ fms. on them at low water.

ASSATEAGUE LIGHT.—Continuing to the southward, we come soon upon the range of Assateague Light, which is fixed and situated about 2 miles from the S.W. point of Assateague Island, in lat. 37° 54′ 37″ N. and long. 75° 21′ 4″ W. The light-house is a red brick tower. The light is 150 ft. above the sea, visible 18 miles.

WINTER QUARTER SHOAL.—The centre of this shoal bears E. by N. ¼ N., distant 11½ miles from Assateague light-house, and is one mile long, and one-third of a mile wide, running in an E. by N. ¾ N., and W. by S. ¾ S. direction, and has not more than 3 fms. of water upon it, and in several places only 12 ft. at low tide. On the seaward side the soundings change suddenly from 9 to 4 fms. and then to 2 fms. There are 10 fms. between it and the nearest land, from which it is distant 6¼ miles. In clear weather the lantern of Assateague light-house is visible from it. The sea breaks upon this shoal in heavy weather, and it is highly dangerous, as the soundings change suddenly and it lies just in the track of vessels.

Buoy.—An iron buoy, painted in horizontal stripes, with W. Q. S. in white letters, is placed in 8 fms. water E. by S., a quarter of a mile from the shoalest part of the shoal. Green Run bears from the buoy N.W. ¾ N., 5½ miles, and Cape Chincoteague W. by S. ¼ S.; but it is liable to go adrift.

Light.—A light vessel is placed outside Winter Quarter Shoal in 11 fms., S.E. by E. ½ E, 2 miles from the centre of the shoal, and shows a fixed white light 15 ft. above the sea, and visible 11 miles.

Between the Winter Quarter Shoal and the Gull Banks, there are several spots of 3½, 4, and 5 fms., which will be best understood by the chart.

BLACK FISH BANK is a long narrow ridge, running N.E. ½ E. and S.W. ½ W., 5 miles long, about a mile in width, and distant 4½ to 6 miles from the land, with from 3¼ to 5 fms. upon it. Its north end bears E. by S. ¼ S., distant 7¼ miles, and its S. end, S.E. by S. 5½ miles from Assateague light-house.

The CHINCOTEAGUE SHOALS lie within the Black Fish Bank, they extend 3¾ to 4¼ miles from the Assateague light-house, and bear from it S. ½ W. to S.E. by E. ¾ E., comprising 6 points of the compass. They have from 9 to 17 ft. water upon them, and the southern edge is marked by a red buoy.

In the immediate neighbourhood of these shoals, and especially within the range of Assateague Light, the bottom is exceedingly broken and uneven. The general set of the current along this part of the coast is to the southward and westward; and vessels from the southward have sometimes been set inshore among these dangers by it; so that this part of the coast should be avoided by large vessels, unless well acquainted with the district. Should the mariner suspect he is approaching the land in this vicinity, he should keep the lead going, and, after striking soundings in 11 or 12 fms., should keep a good look-out. In day time large vessels should not approach the land nearer than 10 miles, with the trees just in sight from the deck, or a little above it; and at night, even in clear weather, when coming from the southward, a vessel should come no nearer than to get the light just in sight.

ASSATEAGUE and CHINCOTEAGUE INLETS are to the south-westward of the light-house. The bar and entrance to the latter are marked by several buoys; but neither entrance should be taken without local knowledge. To the southward of Assateague bar there is anchorage in 3 fms. for small vessels, partially sheltered from the N.E. and E. by the Ship and Chincoteague Shoals.

From Chincoteague to Cape Charles the land trends S.S.W. $\frac{1}{2}$ W., with several barred inlets; the land is low, sandy, and marshy.

The above inlets afford but dangerous harbours in a gale of wind, but a vessel may ride along shore with the wind from N.W. to S.W. Should it blow hard from the N.E. or E.N.E., and in sight of Assateague light, the only chance of safety is to stand for the southward, as a vessel cannot claw off the land to the northward, neither can she get into the harbour of Chincoteague; and when the wind is to the eastward, there is generally found thick weather on this coast. The current generally sets in the direction of the land, or about S.S.W.

PORPOISE BANK.—This is a bank of 6 fms. sand and shells, of small extent, but lying considerably off the land; it bears from Assateague Light-house S. $\frac{1}{4}$ W., 15 miles, and 10 miles from the nearest land, in lat. 37° 39′ N.

PARAMORE BANK.—This is a more extensive bank than the former, lying E. by N., and W. by S. $4\frac{1}{2}$ miles. The eastermost end has 4 and $4\frac{1}{2}$ fms. water upon it, while there are $3\frac{1}{2}$ fms. about the centre, and also at the west end, the latter bearing S.E. $4\frac{1}{2}$ miles from Wachapreague Inlet.

Light.—Hog Island.—On the west point of the island, and north side of Great Machipongo Inlet, in lat. 37° 23′ 16″ N., and long. 75° 41′ 55″ W., is a white light-house, 45 ft. in height, and 60 feet above the sea, showing a fixed light, visible 13 miles. This light serves as a guide to coasters, and for entering Great Machipongo Inlet; the shoalest water on the bar of which is 9 ft. at low water. Little Machipongo Inlet is about 7 miles to the northward, and of similar depth.

To the southward the low, swampy land, broken into islands, takes a S.W. by S. direction for 18 miles to Smith's Island light-house, which may be termed the light-house of Cape Charles. In this extent there are sevaral smaller inlets only navigable to small coasters, and the shoal-water to 5 fms., extends to $3\frac{1}{2}$ miles from the land.

SMITH'S ISLAND SHOAL, AND SHARK SHOAL.—Nearly in the latitude of Cape Charles, 4 and 5 miles off the land, are the Smith's Island and Shark Shoals. The former lies E. by S. $\frac{1}{2}$ S., 7 miles from Smith's Island light-house, and has $3\frac{1}{4}$ fms. upon it. The latter lies S.E. by E., a little under 5 miles from the same, and has but $2\frac{3}{4}$ fms. upon it. These shoals are small in extent, but the surrounding depths are but moderately greater, and towards the sea deepen gradually, so that at 11 miles from the land a vessel will only find about 10 fms.

Directions.—S.S.E. $\frac{1}{2}$ E. 23 miles from off Cape Henlopen, will lead to the eastward of the Fenwick Shoal, and when the Bell-boat, riding off that shoal, bears about W., alter the course to S.S.W.; this course for about 30 miles will bring a vessel nearly abreast of Winter Quarter shoal, about the parallel of 38°; then a

long course of 60 miles S.W. by S., if your vessel will lie well up, will bring abreast of Smith's Island Shoal, with Smith's Island light bearing W. by N.; from hence a S.W. by W. course for 18 miles will take a vessel to Cape Henry.

On pursuing the course of the land from Cape Henlopen, southward, an opening will be seen at the distance of 11 miles. This is Indian River Inlet, and leads to Indian River Bay, and another large lagoon called Rehoboth Bay; but this is generally shallow, and fit only for vessels drawing not more than 6 ft. water.

There is good anchorage within the Chincoteague Shoals, which is frequently used by coasting vessels; some, however, make Matomkin Harbour, a small place, which at high water has not more than 12 ft. water over the bar with spring tides; but this place should only be taken by those acquainted with it, and as previously observed, the harbours are all dangerous along this coast in gales of wind, and should not be attempted.

Approaching the Chesapeake, on the above course to the southward of Chincoteague, a vessel will have from 12 to 9 and 8 fms. up to Smith's Island Shoal. Coming in for the entrance, from the E.N.E. and steering W.S.W., at the distance of 50 miles, there are 25 fms., and at 30 miles from the entrance 18 fms., decreasing to 12, 9, and 7 fms. off Smith's Island Shoal. Coming in due west for the entrance there are 27 fms. at 55 miles distance; at 25 miles distance 13 fms., coarse sand and shells, decreasing gradually to the flats. Steering W.N.W. for the entrance, 22 fms. will be had about 45 miles off, shoaling towards the entrance to 10 fms. at 12 miles from the flats. Approaching N.W., there are 14 fms. coarse sand at 40 miles from the entrance, and 10 fms. at 20 miles, thence gradually lessening in depth to the 5 fms. line of the flats of the Middle Ground, where a red buoy is moored.

About 22 miles to the eastward of Cape Henry, off the mouth of the Chesapeake, there are beyond the 10 fms. line, which is 15 miles off, some single casts of 10 fms. but these can be best understood by a reference to the charts.

On coming from sea and falling in to the northward of the Capes of Virginia, a vessel might make the light on Hog Island, which has a shoal off the east side, and also Machipongo Island.; the latter is the smaller island. Smith's Island, on which is a light-house, is about 6 leagues S.W. by S. from Hog Island; the latter is longer than Smith's Island, and the trees stand more open, and are not so thick as on Smith's Island. On proceeding southward from this, the sand hills will be made between Hog Island and Smith's Island, which is a sure mark that Smith's Island is not passed. Do not come nearer than 7 fms. when off the sand hills, as within that depth the ground is broken.

Light.—Cape Charles.—On Smith Island, in lat. 37° 7′ 9″ N. and long. 75° 53′ 33″ W., is a white light-house, 150 ft. in height, and 160 ft. above the sea, showing a fixed light, varied by a flash, of 3 seconds duration, every minute.

Smith's Island is the first island after passing the sand-hills above mentioned. On the northern end of it there are some straggling trees, which appear like a grove, but which join on to the island. On drawing up with Smith Island, haul into 6 and 5 fms., till nearly abreast of it.

There is good anchorage under Smith Island., which is frequently used with the wind from the N.N.W. to N.W., and vessels often come to there if the wind is from the north and westward. To anchor here bring the light to bear W.S.W. and run for it; go into 3 fms., or less, according to your draught of water, blue mud and sand.

From this anchorage Cape Henry bears S.S.W.; and when leaving it steer S. by W. till across the North Channel in 7¼ fms. Keep on until into 5 fms. on the Middle Ground, then steer S.W., crossing the Middle Ground in 4 fms., until the water deepens in the Ship Channel to 7 fms.; then a W. by N. course, with a good breeze, will carry across the deep water to soundings on the tail of the Horse Shoe.

When coming from the southward for Cape Henry, keep in 7 fms. until up with False Cape, which is about 21 miles from Cape Henry, towards Currituck; then 9 to 10 fms. is full near enouth to False Cape. Off False Cape, E. by N. ¾ N., distant 1¾ mile, is a shoal with 15 ft. water upon it, and 5½ fms. inside.

When to the northward of False Cape, edge in again to 7, 8, and 9 fms. (which will be in a good ship channel), until up with Cape Henry. From off Roanoke the soundings along the shore are hard sand until nearly up with Cape Henry; here the bottom becomes sticky, and a vessel will then be in the Channel way.

The shore between False Cape (off which there are generally breakers at a short distance from the shore), and Cape Henry makes like a bay, somewhat resembling Lynhaven Bay, westward of Cape Henry, and in thick weather a stranger might mistake one for the other, and even False Cape for Cape Henry, if the light-house on the latter could not be seen; but observe that round False Cape the bottom is hard, and in Lynhaven Bay it is soft or sticky bottom, and in some places there, very tough bottom.

The passage between Cape Charles and the Middle Ground is not frequented by large vessels. It is used by those well acquainted with the navigation in vessels drawing 8 or 10 ft. water.

Light.—CAPE HENRY.—This cape is on the south side of the main entrance to Chesapeake Bay, and is in lat. 36° 55′ 29″ N., and long. 76° 0′ 32″ W. On it is erected a white light-house, 82 ft. in height, and 129 ft. above the level of the sea, which shows a fixed light, visible 17 miles.

HAMPTON ROADS.—When a vessel is within Cape Henry, and bound to Norfolk or James's River, a W. by N. ½ N. course will lead up to abreast of the Thimble Pile light-house on the Horse-shoe Reef on the north, and the Black buoy off Willoughby Spit on the south side of the channel in 5 fms. If the tide be flood, steer half-a-point more to the southward; if ebb, half-a-point more to the northward. When the Thimble light-house bears N.E. by E. ½ E., distant one mile, the course up is W.S.W. or toward Old Point Comfort light-house. When the east end of Rip Raps, on the south side, is on with Sewall Point, steer midway between the Rip Raps and Old Point Comfort light-house for Hampton Roads and anchor in from 7 to 10 fms. water, the light-house bearing from N.E. ½ N. to N.E. ½ E., distant 1, 2, or 3 miles.

The channel from Hampton Roads to Norfolk is too intricate for a stranger to navigate; indeed, no stranger should attempt the navigation of the Chesapeake without a pilot, or being well acquainted with the various ports and rivers. Sailing directions here become of little aid to the mariner in absence of the larger chart of the American Surveys, and with these on a large scale there is little need of any written accompaniment. The following is a list of the light-houses and vessels in the bay and river, and add some short instructions that may be of service to those who have not a thorough knowledge of the navigation:—

Light-houses and **Light-Vessels** at the entrance and within Chesapeake Bay. Bells are struck during fogs.

SMITH'S ISLAND.—Light-house already noticed.

CAPE HENRY.—Ditto.

THIMBLE SHOAL, off Horse-shoe Bar, on the north side of the channel to Hampton Roads, a pile light-house, showing a fixed red light, varied by red and white flashes every 15 seconds. To the southward of the light-house the water deepens rapidly to 8 and 9 fms.; there is a 10 ft. patch about 700 yards to the westward. In fogs two bells are struck, one on the north, the other on the south side of the light-house.

OLD POINT COMFORT.—On the north side of the entrance to Hampton Roads, in lat. 37° 00′ 2″ N., and long. 76° 18′ 26″ W., a white light-house, 48 ft. above the sea, showing a fixed light, visible 12 miles. On the shore of the bay, in front of Fort Monroe, a fog bell, struck by machinery, placed near the beach.

Old Point Comfort Beacon Light.—On the S.W. point of Old Point Comfort a small black beacon, showing a fixed light, 18 ft. in height, and 21 ft. above the sea, visible 5 miles, to guide vessels to the anchorage inside Hampton Bar.

Craney Island.—On the west side of the channel, near the mouth of Elizabeth River, a white light-house on screw-pile foundation, red lantern. The lantern is 51 ft. above the sea level, and shows a fixed light, visible 11 miles.

Lambert Point.—On the east side of channel, in Elizabeth River, a pile light-house in 6 ft. water, showing a fixed red light, visible 11 miles.

Naval Hospital.—On the wharf at Naval Hospital, west side of Elizabeth River, a light-house with fixed light, visible 6 miles.

There are four lights on ascending James's River to Richmond, three on the starboard side, and one on the port side of the channel going up; those on the starboard side are screw-pile light-houses, that on the port is on Jordan point. All fixed lights. Two small lights are shown at Dutch Gap Canal.

Back River.—On the point. south side of the entrance to Back River, a white light-house 30 ft. in height, and 35 ft. above the sea, showing a revolving light every 1½ minute, visible 10 miles. This light is about 5 miles N.E. of Old Point Comfort.

York Spit.—On the east end of York Spit, entrance to York River from Chesapeake Bay, a screw-pile light-house in 12½ ft water, showing a fixed red light, visible 11 miles, serves as a guide up and down the bay.

Too's Marshes.—Near Too's Point, a pile light-house, showing a fixed light, visible 11 miles, marks the entrance to York River.

New Point Comfort.—On the north side of the entrance to Mob Jack Bay, a white light-house, 60 ft. above the sea, showing a fixed light, visible 13 miles.

Wolf Trap.—On the East end of the Wolf Trap Shoal, between the York and Rappahannock Rivers, a screw-pile light-house in 12½ ft. water, showing a fixed light, varied by flashes every half minute, visible 11 miles.

Stingray Point.—About one mile east of the point, south side of mouth of Rappahannock River, a screw-pile light-house, coloured white, showing a fixed red light, visible 11 miles.

Windmill Point.—On Windmill Point Shoals, north side of Rappahannock River, in lat. 37° 35′ 50″, and long. 76° 14′ 10″, a screw-pile light-house in 12 ft. water, showing a fixed light, visible 11 miles.

Smith's Point.—On the shoal and spit, making out from the S.E. side of the Potomac River, a screw pile light-house, in 12 ft. water, showing a revolving light every 25 seconds, visible 11 miles.

Point Lookout.—North side of entrance to Potomac River, a white light-house, 37 ft. above the sea, showing a fixed light, visible 11 miles.

Potomac River.—On ascending the Potomac River there are 7 light-houses; but as a description of these, without a knowledge of the river, would be of little service, we here only allude to them, leaving the rest to the pilotage of the river.

All the lights noticed above in Chesapeake Bay are on the western shore, we now return to the entrance, and enumerate those on the eastern shore, until abreast of Point Lookout.

Cherrystone.—On the shoal, west side of entrance to Cherrystone Inlet, 1½ mile south of Sandy Point, in lat. 37° 15′ 36″ and long. 76° 2′ 7″, a screw-pile light-house, painted white, 36 ft. above the sea, showing a fixed light, visible 11 miles.

Occohannock Creek.—On the northern point of the creek in lat. 37° 33′ 30″ and long. 75° 56′ 30″, is a small light-house; but uncertain if now lighted.

Watt's Island.—On south end of the island, in lat. 37° 46′ 53″ and long. 75° 53′ 38″, east side of Tangier, and west side of Pocomoke Sound, a white light-house,

46 ft. above the level of the sea, showing a fixed light, varied by flashes, and visible 12 miles.

JANE'S ISLAND.—Off the tail of Jane's Bar, entrance to the Little Annamessex River, Tangier Sound, in lat. 37° 57′ 51″ and long. 75° 54′ 55″, a screw-pile light-house in 6 ft. water, showing a fixed light, visible 11 miles.

SOMERS COVE.—1¾ mile east of Jane's Island light-house, a screw-pile light-house in 6 ft. water, showing a fixed light, visible 11 miles.

KEDGE STRAIT.—Off Soloman's Lump, a pile light-house, showing a fixed light, visible 11 miles.

Above Point Lookout, the northern point of the Potomac, and on the western side of the Chesapeake, are the following lights:—

COVE POINT.—Four miles to the north of the entrance to the Patuxent River, a white light-house, 46 ft. above the sea, showing a fixed light, varied by flashes, every 1½ minute, visible 11 miles.

THOMAS'S POINT.—On the shoal off the point, north side of mouth of South River, and 4 miles south of entrance to Annapolis Harbour, a white pile light-house, 43 ft. above the sea, showing a red flashing light, visible 12 miles.

GREENBURY POINT.—North side of entrance to Annapolis Harbour, a white light-house, on the keeper's dwelling, 50 ft. above the sea, showing a fixed light, visible 11 miles.

SANDY POINT.—On Sandy Point, a brick light-house on keeper's building, 50 ft. above the sea, showing a fixed light varied by flashes every 1½ minute, and visible 12 miles.

SEVEN-FOOT KNOLL.—Mouth of Patapsco River, between the Main and Swash Channel, in lat. 39° 9′ 16″ and long. 76° 24′ 34″, a black iron screw-pile structure, with white window shutters, 43 ft. above the sea, showing a fixed red light, visible 12 miles.

CRAIGHILL CHANNEL.—On the north side of the entrance to Patapsco River, two white light-houses, being respectively 106 and 40 ft. above the sea, both showing fixed lights, visible 16 and 11 miles. These lights serve as leading or range for the main channel.

FORT CARROL.—On Fort Carrol, in the Patapsco River, on the northern side of channel, a brown light-house, 75 ft. above the sea, showing a fixed light, visible 10 miles.

LAZARRETTO POINT.—North side of Baltimore Harbour, a white light-house, 35 ft. above the sea, showing a fixed red light, visible 11 miles.

HAWKINS POINT.—South side of Patapsco River, a screw-pile light-house, showing two fixed lights. A fixed light is also shown 1½ mile N.W. from Hawkins Point.

POOL'S ISLAND.—Off the mouth of Gunpowder River, a white light-house, 35 ft. above the sea, showing a fixed light, visible 11 miles. A fog bell.

FISHING BATTERY.—On Fishing or Donoho's Battery, entrance of the Susquehanna River, at the head of Chesapeake Bay, a light-house, on the keeper's dwelling, 36 ft. above the sea, showing a fixed light, visible 11 miles.

HAVRE DE GRACE.—On Concord Point, mouth of Susquehanna River, a white light-house, 40 ft. above the sea, showing a fixed light, visible 11 miles.

On the eastern shore of the Chesapeake above, or to the northward of the Potomac, are the following:—

HOOPER'S STRAIT.—On the shoal, south side of the channel, between Hooper's and Goldsborough Islands, and abreast of the entrance to Honga River, in lat. 38° 13′ 00″ and long. 76° 5′ 00″ A screw-pile light-house showing a fixed light, visible 11 miles. *(This light-house was destroyed by ice, January, 1877.)*

E. ¼ N., 5 miles from the above light is a fixed light on Clay Island at the entrance to Fishing Bay and Nanticoke River.

SHARP'S ISLAND.—On the north end of Sharp's Island, a white light-house, 35 ft. above the sea, showing a fixed light, visible 11 miles, to mark the entrance to the Choptank River.

A screw-pile light-house, showing a fixed light, is shown opposite the entrance to the Choptank and Tread Haven Rivers, 9 miles to the eastward of Sharp's Island light.

LOVE POINT.—On the shoal, off the north end of Kent Island, a screw-pile light-house, showing a fixed light, visible 11 miles.

TURKEY POINT.—On the bluff point separating the mouths of the Elk and Susquehanna Rivers, a white light-house, 65 ft. above the sea, showing a fixed light, visible 13 miles.

ENTRANCE TO CHESAPEAKE BAY.—Cape Charles forms the northern point of the entrance to Chesapeake Bay and to the S.E., South, and S.W.; within a radius of 6½ miles, are the several shoals of Nautilus, Middle Ground, and Inner Middle, as well as the small low islands of Isaac and Fisherman. These islands lie within 2 miles of Cape Charles, and S.W. by W. of Smith's Island.

The Nautilus Shoal lies to the S.E. of Cape Charles, about 4 miles distant, and has 1½ to 2 fms. upon it. It lies in about the same direction as Smith's Island, N.E. by E. and S.W. by W. curving round the entrance of the bay, and nearly joining the Middle Ground.

The Middle Ground commences about 6 miles south of Cape Charles, and then curves round to N.N.W. ½ W. up the Chesapeake to the extent of about 9 miles, and within about 6 miles of the shore. It is a narrow strip of shoal ground, having least water, 1¾ fms. upon it, and 2½ and 3 fms. on other parts.

The Inner Middle Ground is within the former, and may also be said to be within the bay, commencing about 2 miles W.S.W. of Fisherman's Island, and extending in the same direction as the land and the Middle Ground, 5 miles. The shoalest parts of this sand have but half-a-fathom, which are nearly abreast of Fisherman's Island; at other parts, three quarters, 1, 1½, 2, and 3 fms. upon it. It is separated by a gutway running N.N.W. ¼ W. and S.S.E. ¼ E., which has 5½ and 7 fms. in it; and between the main body of the shoal and the coast there is a shallow channel of 3½ and 4 fms. called the North Channel.

Between the western edge of the Inner Middle and the eastern part of the Middle is a channel 2 miles in width, with 4, 4½, and 5 fms., called the False Channel; from the northern entrance of which flats stretch off to the northward and W.N.W., having 4½ and 5 fms. upon them.

Between the Nautilus Shoal and the Middle Ground, at the entrance of the bay, there is what is termed the False Approach, a narrow way of 3½ fms., leading to the False Channel; and off this False Approach, flats stretch off to the southward and S.E., 4 miles, to within 3 miles of Cape Henry, where there is a red buoy in 3½ fms. with Cape Henry light bearing S.W. ¼ W. These flats carrying 4, 4½, and 5 fms., extend north-eastward to the Shark and Smith's Island Shoal, and to shoal water along shore to Hog Island, &c.

At the S.W. elbow of the Middle Ground, there is a red buoy placed in 2½ to 3 fms. at about 4 miles N.W. by N. from the red buoy of the flats just noticed. This buoy lies with Cape Henry light-house, bearing nearly south, distant 5½ miles; and Smith's Island light-house N.E., 9¼ miles.

The next shoal to be noticed within the cape is the Horse-shoe, stretching eastward from Old Point Comfort, and dividing the navigation between the James River and Chesapeake Bay. The tail of the Horse-shoe, on which is a red buoy

with the name "Horse-shoe" in large white letters, in 29 ft. water, lies about 4 miles N.W. by N. from Cape Henry light-house, and 12 miles E. ½ S. from the light-house on Old Point Comfort ; the least water at the buoy is 4 fms., hard sand, with broken ground. The southern edge of this shoal runs W. ½ N. until it connects with the main shore, a little to the north of Old Point Comfort, forming the northern side of the channel into Hampton Roads. The N.E. side extends in a N.W. direction until it connects with the Poquosin Flats, nearly up to the entrance of York River, and forms the western side of the bay channel. There is good anchorage on the Horse-shoe, from the tail to within 3½ or 4 miles of the shore, and smaller class of vessels may run further in. The shoalest part of the Horse-shoe Tail, which is a patch of 2¾ fms., lies N.W. by W. ⅔ W., 3½ miles from the red buoy.

On the southern edge of the Horse-shoe are two other buoys, one, a black buoy, on the point of the sand, at 6 miles W. by N. ¼ N. from the red buoy of the Tail; the other, a red buoy, 1½ miles west of the Thimble light-house.

THE THIMBLE is a small lump lying E. 15° N. from Old Point Comfort light-house, distant 3¼ miles, and on the north side of the channel leading to Hampton Roads, with about 9 ft. water on it. Near this lump is the pile light-house ; the buoy lies in 3 fms. water, 1½ mile west of the Thimble light-house.

In proceeding towards Hampton Roads from the sea, it is advisable to get soundings first on the Horse-shoe, where the bottom is hard sand ; whereas near the Thimble the bottom is sticky. (See page 6).

TIDE.—The flood tide runs in round Cape Henry and Lynn Haven Bay until 8 o'clock, on the F. and C. of the moon in mid-channel ; and out of the way of the Chesapeake stream it flows at 8h.; in Hampton Roads at 8h. 22 min., rise 3 ft. As the tide varies considerably in its direction, according to the time from ebb to flood, and is influenced by the wind, attention should be paid to the bearings of the lights, as well as to the soundings, when running up either to Willoughby's Point, or New Point Comfort, for fear you cross the channel. The ebb from James and York Rivers sets over the Middle Ground to the eastward, which renders the navigation dangerous in the night, or thick weather.

In coming from the southward and intending to round Cape Henry, care should be taken to avoid a small shoal that stretches about 2 cables from the shore, east from the light-house ; when round this the rest of the point is moderately steep.

In turning to windward for the entrance, stand to the southward until the light-house bears N.W. by N., and to the northward till it bears W.S.W. On either of these bearings the depth is about 6 fms. at 6½ miles from the light-house ; but within that distance on the former bearing a vessel will be approaching the shoal water of the shore, and where she will have to make shorter boards. On rounding Cape Henry there is a depth of 12, 11, and 10 fms. mid-channel, and 7 fms. well in with Cape Henry and the flat of the Middle Ground. Within Cape Henry, on standing into Lynn Haven Bay, the water shoals from 7 to 4½ and 3½ fms. in the Roads.

If anchoring in Lynn Haven Bay, when in the channel with the light W. by S. in 8 or 9 fms. sticky bottom, take soundings from the south shore, by keeping in towards the light-house, and when within a short distance of it haul round the point into the bay, and anchor in from 3½ to 4½ fms.

FROM CAPE HENRY AND LYNN HAVEN BAY TO YORK RIVER.—Cape Henry brought S.S.E. will lead near the western edge of the Middle Ground, and brought S.E. by S. will lead on to the north-eastern edge of the Horse-shoe ; therefore it will be proper to keep anywhere within these two bearings, which will lead between the shoals. The soundings on the northern edge of the Horse-shoe are gradual. Steer from Cape Henry N.N.W. or N.N.W. ½ W. until Cape Charles comes E. by N. ; a vessel will then have passed the Horse-shoe, and may sail N.W. ½ W. or N.W. ¼ N., according to wind and tide ; but with a northerly wind

and ebb tide, which sets strongly over the Horse-shoe, be cautious not to lessen the depth beyond 5 fms.; and in proceeding beyond Drum Island take care not to fall into less water until you open and enter the river above the marsh, having 9 and 10 fms. running up towards York and Gloucester, and anchoring where convenient.

On entering York River the light on the spit, and a red buoy 4 miles to the N.W., must be left to starboard, while two black buoys on the opposite shoals are to be left to port.

With a contrary wind, and bound from Lynn Haven Roads to York River, stand towards the Horse-shoe to 5 or 4½ fms., and from it to 6 and 7, until within 2 miles of the light on the spit; above this position make shorter boards, and do not stand to the N.E. into less than 5 or 6 fms.; or above the light, than to get the light and red buoy in range. When up with the black buoy on the south side of the entrance, there is a gut of considerable depth close to the entrance of Poquosin River. Be careful also of standing too far in to the southward, lest you touch on the shoal extending from Toos Marsh or point. Having advanced thus far, approach no nearer to the south shore than the depth of 7 or 6½ fms. between this and the town of York.

On the opposite side a vessel should not stand towards Hog's Islands, lying off Monday Point, nearer than 11 or 10 fms.

Close to the extremity of York Spit there is a depth of 6 fms., near the middle of it are 7 fms., and close to its N.W. part, by the Hog Islands, there are 11 fms., being all steep to. Within this, the flat from the north shore extends nearly one-third over the river, and should not be approached nearer than in 9 or 8 fms.

FROM CAPE HENRY TO NEW POINT COMFORT.—Having advanced to the northward of the Horse-shoe and Middle Ground by the preceding directions, a vessel may steer N.N.W. ½ W., 13 miles, which will take her into Mob Jack Bay; but be careful of the New Point Shoal of 2¾ fms., which lies 4 miles S.E. from the point, and is marked by a black buoy, and also of the shoal off New Point Comfort, which stretches in the same direction 2 miles, and is marked by a red buoy. A vessel anchoring at New Point Comfort, which bears N.N.W. ½ W. from Cape Henry, distant 25 miles, should keep to the westward of the point of the spit, marked by a red buoy, and run in and anchor under the point in 3½ and 4 fms. water, fine bottom, where she will lie well sheltered from N.E. winds. This is Mob Jack or New Comfort Bay. Four rivers run into it, named the Severn, Ware, North and East Rivers; these are navigable for vessels of 50 or 60 tons burthen, and are much frequented.

Should a vessel, lying at anchor in Mob Jack Bay, be exposed to winds blowing from E.S.E. to S.S.E., it will be advisable to run for the River Severn; to do which, bring the extremity of New Point Comfort to bear E. by S., and steer W. by N., 6 miles, until the entrance of the river bears W.S.W.; then run in that direction or S.W. by W., and ride land-locked from all winds.

In running for this river, two bunches of trees will be seen on the port hand, which, at a distance, appear like two islands; but on approaching them it will be seen they are on the mainland. In going into this river it is advisable to keep the lead going: keep in the middle, and go between two points of Marsh, where a vessel will have no more than 3 fms. between New Point Comfort and the Severn River, muddy bottom. From this river she may easily go to sea, with the wind from S.W. to N.W.

FROM NEW POINT COMFORT TO RAPPAHANNOCK AND POTOMAC RIVERS.—Leaving New Point Comfort beware of the Wolf Trap Spit, which is marked by a light-house N.E. from the point, distant 7 miles, and far out in the fairway of the Chesapeake, and from the entrance of the Rappahannock River S. by E. ¼ E., 12 miles. Over this spit there are two fms. at low water; near the rock 4½ and 5 fms., and about 5 fms. between it and Point Comfort.

If intending to proceed for the Rappahannock after passing between the Middle Ground and the Horse-shoe, and the vessel does not draw too much water, steer directly north up the bay, 17 or 18 miles over the flats of the Middle Ground, to the light-house on the Wolf Trap. Take care not to come to the westward of north until well past the light-house, or until it bears S.W. In the above north course the York Spit light will be left on the port hand, and when abreast of it, distant 5½ miles, you will be in about 6 fms. water, with the screw-pile light-house of Cherrystone bearing N.E. by E. about the same distance. With the light-house on the Wolf Trap bearing S.W., a course N.N.W. ½ W., 10 miles, will lead to the entrance of the Rappahannock, between the Screw-pile light-house, off Stingray Point, and the light-house off the Rappahannock Spit; from hence steer N.N.W., 3 miles, then west, 3 or 4 miles to the northward of a black buoy, off the Sturgeon Creek, on the south side of the river, 2¼ miles within Stingray Point. To proceed further get a river pilot.

All the low points of land in the Chesapeake, both on the Virginia and Maryland shores, have spits of sand or shoal water extending from them, and therefore must generally have a berth given to them.

Windmill Point is very remarkable when bearing W. ¾ S., having a clump of trees near the point, appearing with their lower branches stripped off. This point is just half-way between New Point Comfort and Smith's Point. The Windmill or Rappahannock Spit extends about 4 miles S.E. by E. from the point, and forms a broad shelf of 1½, 2, and 2½ fms.

The course from off the Wolf Trap Rock to the mouth of the Potomac River is north 33 miles. In running the above course and distance the depth is 6, 7, and 6 fms. for about 21 miles, crossing a flat of 3½ and 4½ fms. off the Tangier Islands, on the eastern side of Chesapeake Bay; hence the water deepens to 9, 11, and 12 fms. off the mouth of the Potomac. If being out of the course and find that there are less than 3½ fms. on approaching these islands, haul off a little to the westward, and the water will deepen.

Smith's Point is the southern point of the entrance to the Potomac River, and from it a spit extends in an E. by S. direction, 2½ miles, with 1½ to 2 fms. upon it. Off the end of the spit is a light-house, to be left on the port hand in entering the Potomac. About a mile S.S.W. of the light-house there are 6 fms. water, and a mile eastward and northward 12 and 11 fms.; therefore, in rounding the light-house a vessel will have deep water; but it is better to pass the light a couple of miles on a north course before hauling N.W. by W. for the river.

In running up this part of the Chesapeake, it will always be proper to avoid the large bank of the shoal, which lies to the eastward and surrounds Tangier and Watt's Island. This bank begins about 7 miles to the north-eastward of Windmill Point, from whence its edge runs in a northerly direction to abreast of Smith's Point, leaving a channel between it and the western shore about 8 miles wide, with from 6 to 18 fms., the latter depth about midway. The islands on this shoal are low, and have several tufts of trees upon them. Between them are the entrances to Pocomoke and Tangier Sounds, and the shoal water extends 4 miles from them, leaving the navigable channel between the shoals and the spit off Smith's Point, about 4 miles wide.

Abreast of Point Lookout, the northern point of the Potomac River, the channel is not more than 4 miles wide, and narrow on proceeding further up the bay.

On the south end of Watt's Island, 4 miles to the eastward of Tangier Island and about half-way between that island and the eastern shore is the light-house noticed in the list of light-houses for the Chesapeake.

POTOMAC RIVER is bounded by Smith's Point to the south and Point Lookout to the north, which are 10 miles. This is a large and noble river, leading to WASHINGTON, and dividing the state of Virginia from Maryland.

There are several lights established for the safer navigation of this river by night,

and which have been noticed previously, but these can only be used by those acquainted with the navigation.

If taking Tangier Sound, bring the light-house off Windmill Point to bear S.W., and steering N.E., soundings will be found on Tangier Bar, in 6 fms.; the cluster of pine trees and buildings on the southern Tangier Island will then be seen bearing N.E., then edge off on the southern part of the bar, in any depth, from 3 to 13 fms., bottom hard and sandy; but it is not advisable to come nearer Tangier Bar than 6 fms., as it shoalens from 6 to 2 fms. in 200 yards. A vessel anchoring when the cluster of trees bears west, should haul up to the northward and westward, where there is good anchorage for small vessels, secure from westerly winds, in a bay called Crocket's Bay, about S.E. from the houses in the middle of the island, and N.E. of the cluster of trees. On proceeding up the sound, it is proper to get soundings on the Watts' Island side, as it is rather more gradual, steering parallel with the islands on your starboard hand north, and keeping in mid-channel. Above this the channel is lighted and buoyed, but it is not navigable by any descriptive directions; and if not locally acquainted, a pilot is necessary.

Off Point Lookout, on which is the light-house at the northern point of entrance to the Potomac, is a spit of shoal water, similar, but not so extensive as that off Smith's Point. This spit runs S. ½ W., upwards of a mile from the light-house, with 2¼ fms. upon it, and 10 fms. at a short distance in the same direction. On the Chesapeake side of the point the shoal water of 4½ fms. stretches off E.N.E., 2¼ miles. and continues about that depth along shore to the northward, 6 miles to Point No Point; above this to Cedar Point, the south point of the Patuxent River, 9½ miles N. by W., the coast becomes more steep. On the opposite side is Hooper's Strait, which leads to Fishing Bay and Nantitocke River, entirely pilots' water.

Vessels proceeding from the entrance of the Potomac to the

PATUXENT RIVER, will take care to keep clear of the shoal off Point Lookout, opposite to which, as before observed, the Tangier Shoals contract the passage or channel to 4 miles in width. The passage here is good and clear of danger, stand over on either side to 4 and 5 fms., but be careful to tack on the eastern side when in 9 or 10 fms., for the ground there shoals suddenly from 4 to 2 fms. hard sand, while on the western shore it is more regular.

The course from off Point Lookout to the Patuxent River is north, 8 miles, and N.N.W., 10 miles, which will lead 1½ mile to the northward of Cedar Point, the southern point of entrance to the Patuxent River. This point is low and sandy, with some bushes and trees upon it; the point is bold on the northern side, so that it must be carefully approached in the night. It extends out into the bay, the shore line making a bend to the westward. Keep in 7 or 8 fms. between Point No Point and Cedar Point. On the northern side of Cedar Point it is shoal, so that after passing it and bound into the Patuxent keep off in not less than 5 or 4½ fms.

Cove Point lies about 5 miles to the northward of Cedar Point; the point is low and sandy, extending out into the bay, making this the first narrow part of the Chesapeake; on the point is a light-house.

The entrance of the Patuxent is remarkable, the land on its northern side is high, called Coxe's Cliffs, and of a reddish appearance. If northerly winds prevent entering the river, run under Cedar Point, and anchor in 3 or 4 fms., or in 4 or 5 fms. under the high red cliffs, and ride in safety.

If bound into the river give Cedar Point a small berth, and stand to the northward till the river opens and then run in for Drum Point, a low, sandy but bold point, which leave on the starboard hand. Give both points of the entrance a berth, and endeavour to keep mid-channel, up the river, for it shoals suddenly on both sides from 6 and 7 fms. to 2 fms., and winds in so serpentine a manner that marks are useless. There is sufficient water for large vessels, nearly as far as Benedict, and from thence upwards to Nottingham it shoals to 4 and 3 fms. The anchorage is everywhere good and holds well.

Bound from the Patuxent River towards Baltimore, run out into the Chesapeake, giving the points of the river a good berth. Keep well off Little Cove and Cove Point, off which runs a spit, which is steep-to, or you may have 8 fms. at one cast, and be on shore before the next; get, therefore, into 9 or 8 fms. water, and keep in mid-channel; the course will be N. by W. ¼ W. 15 miles, when a vessel will be abreast of Sharp's Island light on the starboard side. In this course there are 9, 10, and 12 fms. water. When Sharp's Island light bears east, a mid-channel course north, for 9 miles will lead up abreast of Poplar Island, through 5½, 6, and 7 fms. muddy ground throughout.

James' Island is the next point of land to the northward of Cove Point, on the eastern shore of the Chesapeake, round which to the eastward is Little Choptank River. The western shores of James' Island is bordered by shoal water to 1 mile from the land, 2 and 2½ fms., which runs off in a spit 2½ miles to the northward. Shoal water also surrounds Sharp's Island to a greater extent westward, and continues along the eastern side of the Chesapeake, round Poplar Island to Eastern Bay.

Should foul wind be met with, run in between Sharp's and James' Island midway, to avoid the shoals that surround them, and anchor. Having passed James' Island Point steer about N.E., keeping in 7 or 6 fms.; this will lead in under Sharp's Island, where a vessel may ride safely from N. and N.W. winds. On the northern point of Sharp's Island is a light-house. Pilots may be obtained here.

Severn River.—In running from abreast of Poplar Island to Annapolis Roads, steer N.N.E. about 9 miles to abreast of Thomas Point light-house on the port hand. From this point a dangerous shoal runs off in S.E. direction, which must be carefully avoided, and which is marked by a black buoy, lying about 1¾ mile from the light-house. From abreast of Thomas Point steer N. by W., 3 miles for Annapolis Road, past the spit marked by a black buoy off Tally Point on the port hand.

When abreast of Poplar Island, should the wind prove contrary, run into Eastern Bay, between Kent and Poplar Islands, anchoring in 7 or 8 fms. Here is shelter from all winds but those from the south-westward.

The land from the Patuxent to Annapolis is high, and the soundings towards the shore gradual; and in this space are several small bays. In running from Poplar Island to Tally's or Annapolis Point (the southern point of the entrance to the Severn River or Annapolis), the depth is 5½, 6, 11, 14, 8, and 7 fms.; give a good berth to the Horse-shoe, Thomas, and Tally Points, steering well to the eastward, as there is a long spit from each.

If bound into the river, give Tally Point, a berth, and haul in to the westward for the mouth of the river, taking soundings from the south side, in 3 or 4 fms. A vessel will thus pass between Tally's Point and Greenbury Point light-house, keeping nearly midway between. On the northern side of the entrance, on a spit that runs south from Hacket's Point, is a red buoy, about a mile from the point; and a red buoy is also placed to the southward of Greenbury Point. Just above Greenbury Point a vessel may anchor in 3 or 4 fms., secure from all winds.

The best anchorage for a large ship in the Outer Roads, is with the Poplar on Horn Point in one with the State House, in 8 fms. mud, and Thomas Point light-house bearing S.W. by S. about 4 miles from the city. The State House at Annapolis is very remarkable, by its having a large steeple, and may be seen from abreast of the head of Poplar Island.

Should a vessel be bound to Baltimore, and not intending anchoring in Annapolis Roads, continue the course N.N.E. from off Thomas Point, 12 miles through a depth of 8, 9, 7, 6, and 5½ fms., up to the buoy painted in perpendicular stripes. In this part of the Chesapeake the channel narrows to 3 miles, leaving the navigable passage between the shallow water on either side, only 2 miles in width. Here on the port side of the channel in lat. 39° 1′ 00″ is Sandy Point with its light-house, off which, at a mile to the eastward, is a black buoy. When up with the first

perpendicularly striped buoy, which lies N.E. by N., 5 miles from Sandy Point light-house, steer N. by E. 2¼ miles for the second, and north 1½ mile for the third. Here a vessel will come abreast of the buoys that mark the approaches to the Patapsco or Baltimore River, and the navigation becomes too intricate for directions to be of much service to a stranger; but in case of necessity should a vessel happen to be without a pilot, we append a few instructions from the *American Coast Pilot.*

BALTIMORE RIVER.—Being up with Annapolis, and bound to Baltimore, when in the middle of the channel, the course is N. by E. ½ E., which will give the best water, until the Bodkin light-house bears W.N.W. then due north till the Bodkin light-house tower bears W. ¾ S., and the two light-houses at the north point in one, or nearly so, keeping them a little open of each other, until the Bodkin light-house tower bears S.W. by W., then steer W. by N. until the eastern light-house at North Point bears north; when, if at night, anchor in the best water.

If in the day-time, when the Bodkin light-house tower bears W. ¾ S., and the two light-houses on North Point in one, or the bluff of woods on North Point, on with a large walnut-tree on Sparrows Point, steer for either N. 60° W., until the white rocks range with the centre of a red bank on the west side of the river; then N. 88½° W., continuing the said course until the end of Sparrows Point ranges with a gap in the woods on Sailor's Point, and a white house inland, for which steer N. 36° W. until Leading Point is a sail's breadth open with Hawkin's Point (a dusky wood beyond), then N. 64½° W. Steer with these marks on until North Point bears N. 85° E., then S. 85 W. till Hawkin's Point ranges with Leading Point; then N. 61° W. with these marks on, until the flagstaff comes on Fort McHenry to range with the Washington Monument, which differs from the shot-towers from its being white, and stands to the westward of them; steer for these N. 41° W., until up with the Narrows between Fort McHenry and Lazaretto Point, taking care to avoid the Lazaretto Bar on the port hand, and a heap of ballast stones, and Fort McHenry Bar on the opposite hand; then steer for Fell's Point, not forgetting a middle ground or shoal just abreast of Easton, on the starboard hand, with which you must not interfere.

The Bodkin light-house, referred to in the above directions, is the old light-house on the point, the light of which is discontinued; but the tower remains. The present light is shown from the screw-pile light-house on the Seven feet knoll.

Pilotage.—American vessels pay 3 dollars down, and 4 dollars up, per foot. Foreign vessels pay 4 dollars down, and 4 dollars, 33 cents. up, per foot.

BALTIMORE is situated about 10 miles above the north point of entrance to the river. A stream called Jones' Falls divides the city into two parts, the town, and Fell's Point, which are connected by bridges. Baltimore is the centre of an extensive commerce, and has risen rapidly into importance. It exports great quantities of flour, tobacco, hemp, and Indian corn; and has also considerable cotton manufactories; it is the third city in population, and the fifth in commerce in the United States. Vessels of 600 tons burthen can lie at Fell's Point, but only those of 200 tons go up to the town. The harbour is considered one of the finest in North America; the entrance is narrow and defended by a fort.

Having thus traced the navigation of the Chesapeake Bay up to Baltimore Harbour, and given such directions considered useful to the mariner sailing without the aid of a pilot, and not encouraging him to attempt those parts where a pilot's assistance becomes absolutely necessary, we now return to the entrance of the bay.

FROM CAPE HENRY TO CAPE HATTERAS.

From Cape Henry to Cape Hatteras, the bearing is S. by E. ½ E., and the distance 105 miles; but the land about New Inlet, bending to the south-eastward, that direct course cannot be sailed upon; so that wishing to make that course good bring Cape Henry to bear W.N.W., distant 12 miles, and the above course will

carry beyond the shoals of Cape Hatteras, and when the light of Cape Hatteras bears west steer S.W., 81 miles, which will carry clear of the shoals off Cape Lookout.

S.E. $\frac{1}{2}$ S., 19$\frac{1}{2}$ miles from Cape Henry is a shoal of 4 fms., called the Simoon Shoal; but the position of this shoal is not to be relied upon, and ships making the land to the southward of the Chesapeake in the latitude of 36° 40′, should be wary of it.

The coast from Cape Henry trends S. 13° E., and it may be approached within a mile, until off False Cape, which is 20 miles from Cape Henry light-house; east of False Cape, 1$\frac{3}{4}$ mile distance, there is a shoal of 15 ft.; south of False Cape lie the inlets of Currituck, which are shoal, and New Inlet on which are 5 ft. water.

Currituck Beach **Light.**—A light-house is erected about midway between Cape Henry and Body Island light-house. The light is a fixed white light, varied by red flashes every 1$\frac{1}{2}$ minute; the light is 158 ft. above the sea and visible 18 miles. The light-house stands 34 miles S. by E. from Cape Henry light-house.

BODY'S ISLAND **Light.**—On Body's Island, about 35 miles to the northward of Cape Hatteras Light, and about 1$\frac{1}{2}$ mile to the northward of Oregon Inlet, is a light-house, painted in white and black horizontal bands, 156 ft. above the sea, showing a fixed white light, visible 18 miles. Lat. 35° 49′ 3″ N., long. 75° 33′ 50″ W. The land is so low at Body's Island that it cannot be seen in the afternoon more than 2 miles off shore, while Roanoke Island, which is at the back of Body's Island, is in plain sight, and readily deceives the unacquainted.

The land to the southward of Cape Henry is low, having a shallow sand-bank all the way, therefore a vessel should not go into less than 7 fms. water; but 6 miles off the shore the coast is clear all the way from Cape Henry till near the Wimble Shoals. Here are few marks to know this part of the coast by, except a few sand-hills, the principal one of which is in about lat. 36°, and a tall chimney in about lat. 36° 16′.

Loggerhead Inlet, once an opening from the Atlantic into Pamlico Sound, is closed. Only two inlets now exist on the coast of North Carolina, north of Cape Hatteras; these are New Inlet, with 4 ft. of water at low tide; and Oregon Inlet, with 5 ft.

WIMBLE SHOALS.—These shoals lie about 21 miles N. by E. $\frac{3}{4}$ E. from Cape Hatteras, and consist of three ridges parallel to the coast, with 3 and 4$\frac{1}{2}$ fms. water upon them; they bear E.S.E. from the northern part of the woodlands of Chicomico, and distant from 1$\frac{3}{4}$ to 3$\frac{1}{2}$ miles from shore. The soundings are very irregular, changing sometimes 2$\frac{1}{4}$ fms. in one cast, with coarse sand, gravel, and shells on the shoals, and outside, in 13 fms. soft black mud. There is generally a strong current setting towards the shore, and the water shoals suddenly, so that vessels of heavy draught should not approach the land hereabout within 4 miles. Between the inner edge of these shoals and the shore the soundings are 8, 10, and 7 fms.

The currents on the coast of North Carolina, north of Cape Hatteras, are governed by the wind, and are very strong, making heavy rips, which have every appearance of shoals to those who are not acquainted with them. Sometimes the current begins to run quite strong 24 hours in advance of the wind at the same place.

On going northward the ground is fine sand between Cape Hatteras and Cape Henry, and to the northward of Cape Henry coarse sand with some shells among it.

CAPE HATTERAS.

Cape Hatteras is one of the most dangerous capes in North America. It is low, and extends a great way seaward and is distinguished by a main light-house and a beacon light, which will prove useful to mariners, not only in pointing out this part of the coast, but also contributing greatly to enable them to avoid the dangerous shoals with which the cape is surrounded.

Lights.—The main light-house of Cape Hatteras is in lat. 35° 15′ 14″ N. and long. 75° 31′ 17″ W, about 2 miles north of the southern extremity of the cape. The light shows 6 flashes and eclipses in every minute. There is a flash of 10 seconds' duration, followed by an eclipse of 10 seconds' duration. From the base of the tower, to the height of 27 ft. it is coloured red, and above this black and white. The light is 191 ft. above the level of the sea, and is visible about 20 miles.

Beacon Light.—At a quarter of a mile from the southern extremity of Cape Hatteras Point, is a frame structure and lantern painted red. The lantern is 25 ft. above the sea, and the light, which is fixed, is visible about 6 miles.

CAPE HATTERAS SHOALS.—The outer banks or Shoals of Cape Hatteras extend 8½ miles in a S.E. by S. direction, with 9 to 12 ft. on the outer shoal parts. The shoalest danger of these shoals lies in lat. 35° 8′ 45″ N. the middle of which is about 7 miles from the cape, and has only 9 ft. water on it. The Diamond Shoals, are within 3 miles of the cape, the least water upon which is 12 ft. What is called the Spit stretches from the cape in a S.E. by S. direction about 1¼ mile, and has shallow water of 1½ to 2½ fms. upon it.

The sea breaks heavily over these shoals, and the roar of the breakers is heard a considerable distance, sufficient to note a near approach. Before the light-house was erected, and previously to the new surveys, vessels were fearful of approaching within several leagues ; but the actual extent of the shoals being now ascertained to be not more than 9 miles, a nearer approach, if necessary, will not be attended with danger. The present ascertained depth is about a radius of 30 miles from the cape, where there are 30, 35, 40 and 50 fms. and suddenly to no bottom. Between the Outer Shoals of 9 ft. and the Diamond Stone there is a good channel for small vessels, with the wind off the land, and fine weather ; but it will always be prudent to go outside, rounding the shoals in 10 or 14 fms. water. The light bears from the S.E. part of the Outer Shoals N.W. ¾ N., distant 9 miles ; from the middle part of the S.W. patch of the Outer Shoals N.N.W., 7½ miles. Near the extremity of the shoals to the south-eastward there are 12 fms., and at 12 miles S.E. by S. from them are 50 fms., which is not far from the edge of soundings, and near to the influence of the Gulf Stream.

Buoy.—An automatic signal buoy, giving blasts of a whistle at short intervals, has been placed for trial off Cape Hatteras, about 2¾ miles from the outer edge of the shoals, in 12 fms. of water ; Cape Hatteras light bearing N.W. by N., distant about 11½ miles.

Coming in from sea a vessel will be to the northward of the Cape Hatteras Shoals by keeping the light-house N.N.W. by W.; when it bears N.N.W. ¾ W. a vessel will be in a direct bearing for them ; and when it is brought to bear N. ½ W. will be to the southward of them.

To clear the Outer Shoals, on approaching them from the northward and eastward, bring the light-house to bear west, in 10 to 12 fms. water, when a vessel may run south, keeping in not less than 10 fms., until the light-house bears N.W. ½ N., when any course south of west may be steered with safety.

Coming from the southward and westward keep in not less than 10 fms. water, until Cape Hatteras light-house bears N.W., when any course east of north may be steered. In bad weather, and especially at night, do not approach the Outer Shoals nearer than 15 fms. water from the northward and eastward, and 12 to 11 fms. from the southward and westward.

In beating round or between the shoals, it is necessary to watch the bearings of the light and also to keep the lead going. Do not approach the shoals at night or in bad weather, without a good bearing of the light-house, taken before dark.

On running up from the southward and westward, do not approach the land nearer than 10 miles, because 10 or 11 fms. may be found to the westward of the shoals within that distance of the land ; and as 10 or 12 fms. is the depth to the eastward of the shoals in rounding them, mariners might be deceived by the depth.

If intending to take the channel between the Outer Shoals and the Diamond Stone from the northward and eastward, bring the light-house to bear west in 10 to 9 fms. water, distant $4\frac{1}{4}$ miles, and run south until the water shoals to 8 or 7 fms., and the light-house comes N.W. $\frac{1}{2}$ W., when a vessel can run S.W., carrying not less than 4 or $3\frac{1}{2}$ fms. through, and deepening gradually to the south-western edge of it, until in 7 or 8 fms., with the light-house bearing north.

On taking this channel from the southward and westward bring the light-house to bear north, in 8 or 7 fms. water, about $6\frac{1}{2}$ miles distant from it, and run N.E. until in 8 or 9 fms., and the light-house comes N.W., when the shoals will be cleared.

There is a channel between the Diamond Stone and Cape Hatteras Spit, which may be taken either from the northward or southward with not less than 3 fms.; but it is very narrow, and should only be taken by coasters well acquainted. The bottom is hard sand, with some small spots of blue mud. The currents in the vicinity of, and over the shoals, have a velocity of 3 to 5 knots per hour and are greatly influenced in direction and force by the wind. The surface water in the Gulf Stream extends to within a short distance of the Outer Shoals, for some time after a continuance of northerly and easterly winds.

HATTERAS COVE is just round the Beacon light to the westward where there is a good harbour of refuge for small coasters. It affords shelter from the N.E. and good anchorage in 4 or 5 fms. water, with a bottom of soft blue mud. From the anchorage Hatteras light bears N.N.E. $\frac{1}{2}$ E., distant $1\frac{1}{2}$ mile. The S.W. spit of Hatteras has, of late years, made out nearly three-eighths of a mile.

At Cape Hatteras Shoals the tides rise 4 to 5 ft.; but easterly gales will cause a greater elevation. There is a current with southerly winds which runs N.N.E., 2 miles an hour, and with a northerly wind S.S.W. at the same rate.

At Cape Hatteras there are often severe thunder storms in the summer season; they are so sudden and violent as not to give time to reef.

HATTERAS INLET is 12 miles south-westward of the Cape; 12 ft. can be carried over the bar on the ocean side, and there is secure anchorage in 5 fms. water. The entrance with a pilot is easy; but these observations relate only to the use of this inlet as a harbour of refuge.

ALBEMARLE AND PAMPLICO SOUNDS.—These two sounds form together a vast inland navigation to the various places situated on their banks, or the rivers emptying from the westward. Both sounds are of shallow depths throughout, the greatest being $3\frac{1}{2}$ fms., but mostly under that depth, and this is to be found in the upper part of Albemarle Sound. This navigation can only be adopted by those well acquainted with it, and for their aid there are several lights established; some of these are light-vessels, stationed at the different shoals or entrances of the deeper channels, and others are built on screw-piles. To enumerate these would be of no service to the mariner, and our object is to render information on the sea coast of this navigation. The estuary of Bay River, within Pamplico Sound, is upwards of 15 miles long, and 2 miles wide at the mouth, from both points of which dangerous shoals extend at least 2 miles into the sound. At 10 miles from the entrance the river has a breadth of half a mile, and has a good beating channel, which gradually decreases in depth from 3 fms. to 11 ft. But the emptying of Trent River and Chapel Creek reduces the depth to $8\frac{1}{2}$ ft. in the bight known as Mason Bay. This is the shoalest part of Bay River. Any vessel that can cross the swash at Hatteras can be carried to the town of Jackson, and lie alongside the wharf.

Vessels coming in from seaward for the coast of North Carolina, should endeavour to make the land about a degree to the southward of their port; by which means they may avoid being set past their destination by the Gulf Stream, and be most probably favoured by wind and weather; but, if a stranger, and timid of the coast, he would stand the better chance of picking up a pilot.

FROM CAPE HATTERAS TO CAPE LOOKOUT.

The bearing of the light-house on Cape Lookout from that of Cape Hatteras is S.W. ¾ W., and the distance 63 miles; a S.W. ½ W. course, 68 miles will lead from off Cape Hatteras Shoals to a berth clear of the shoals which run out from Cape Lookout. This space is called Raleigh Bay.

OCRACOKE INLET.—This inlet bears from Cape Hatteras W.S.W., distant 25 miles, and is marked on the northern side by a light-house.

Light.—The light-house near the entrance is about 23½ miles to the southward and westward of Cape Hatteras, in lat. 35° 6′ 28″ N., and long. 75° 59′ 12″ W. It is a white tower 75 ft. above the sea, showing a fixed light, visible 14 miles.

There are several buoys to mark the bar; the outermost or bar buoy is a black and white striped cask, in 15 ft. water, with the light-house bearing about N. ½ E.

The light and buoys afford excellent marks for the pilots and coasters; but strangers should not take the bar without assistance, as the channel is constantly shifting. The inlet is not only useful to the waters of Pamplico and Albemarle Sounds, but also affords shelter to vessels in all winds.

CAPE LOOKOUT.—**Light.**—On this point a light-house is erected. It stands near the extremity of the cape in lat. 34° 37′ 16″ N., and long. 76° 31′ 18″ W., and is painted in chequers, black and white. The lantern is 156 ft. above the sea, and shows a fixed light visible 19 miles. The house is surrounded by a small growth of trees, from which a bold sand-beach extends in a S.E. direction, about 3 miles, in the centre of which are small hillocks of sand. The keeper's dwelling, which is part of the old tower, is painted in chequers, black and white. The light although seen clearly all night, until near the approach of day, cannot then be discerned, owing, probably, to a mist that rises between the vessel and the lamps. It is judged imprudent to approach the shoals of Cape Lookout in the night nearer than 9 fms. on the east and 10 fms. on the west side. The land on Cape Lookout is very low, and cannot be seen more than 3 miles in the clearest weather from the deck.

CAPE LOOKOUT SHOALS.—The breakers make S. by E. ¼ E., 7½ miles from the light-house, they are constant, with the exception of a space of 2½ miles, where, in moderate weather, the sea does not break; and this space is reported to be used by vessels drawing less than 9 ft. From the south point of the constant breakers, the shoal continues in the same direction 3 miles further, or 10½ miles S. by E. ¼ E. from the light-house. This part of the shoal is indicated by light green water, varying to a yellow tinge on the shoalest lumps, and is also very "lumpy," the water over it varying in depth from about 9 to 18 ft.; and it is on this point south of the constant breakers, that vessels have recently grounded.

About 1½ mile to the S.E. of the above shoal is one on which there are 5½ fms. water, and still further in the same direction, and S.E. by S. ½ S., 13½ miles from the light-house lies another shoal, on which there are 5½ fms. of water. Beyond this no indication of shoals was discovered.

With the eye 13 ft. above the water, and 10½ miles from the light-house, just clear of this dangerous shoal, the ground on which the light-house stands is below, and the lower red stripe of the old light-house is half its width above the horizon. The constant breakers are plainly in sight 3 miles distant. The lower red stripes well on the horizon will carry a vessel round the dangerous shoal in 6 to 8 fms.

On the 5½ fms. shoal the breakers are in sight, with no horizon showing beyond, and when on the outer shoal in 5½ fms., the lower edge of the upper red stripe of the old light-house is a little above the horizon, and there are no breakers in sight. With the top of the old light-house just discernible above the horizon a vessel will be clear of all the shoals, and 15 miles from the light-house.

In from 7 to 11 fms. the colour of the water is a dark green; in 5 fms. a pale green, and in 3 fms. and less, a very light green, varying according to depth.

FROM CAPE LOOKOUT TO CAPE FEAR.

The bearing from Cape Lookout to Cape Fear is S.W. by W., and the distance 84 miles; vessels abreast of, and 5 leagues distant from Cape Lookout may, by taking a S.W. by W. course, have from 15 to 20 and 9 fms., until abreast of the Tail of the Frying Pan Shoals, with the light vessel bearing N.N.W., distant 4 miles.

Onslow Bay is the space between the two capes; the shore is composed of islands, divided by shallow inlets. At 6 miles off the shore in this distance are from 8 to 9 fms. water, deepening gradually out to seaward.

BEAUFORT.—Old Topsail Inlet lies nearly 9 miles N.W. ½ W. from Cape Lookout and is the principal entrance to the town of Beaufort. To the eastward of the entrance of the inlet, and between that and Cape Lookout is Lookout Bight, having 5 to 7 fms. water pretty close to the beach.

On the western side of the entrance to Beaufort Harbour, is Fort Macon, which is N.W. ¼ N., 21 miles from the Outer Shoal of Cape Lookout.

This harbour is accessible with all winds, except those from the N. and W., and affords safe anchorage.

Directions.—On making the flagstaff of Fort Macon, keep in 6 fms. water until the white square tower in Beaufort bears N.N.W. ¼ W.; stand in upon this bearing for the Outer Bar buoy, which bears S.E. ¼ E. from Fort Macon Flagstaff. Leave the outer buoy a few yards on the starboard hand, crossing the bar by running directly from buoy to buoy. The buoys are in the best water, and must be kept close aboard. When abreast of the third or inner striped buoy steer N.W. by W., and when Fort Macon flagstaff bears N.W. ½ N., change the course to N.N.W., leaving the red buoys off Shackleford Spit and the southern extremity of the Middle Ground, 30 yards on the starboard hand. Fort Macon Point must not be approached nearer than half-a-cable's length. When off the Government Wharf anchor at will in 3 or 4 fms. muddy bottom. Generally the outline of the channel way is clearly indicated by the shoal water and breakers on both sides.

When entering on the flood keep nearer to the Bar breakers than those on the starboard hand, and reverse of this when entering on the ebb. The channel is narrow and subject to frequent changes, but the buoys are carefully attended to, and kept in position for the best water. No stranger should attempt to enter Beaufort Harbour at night.

The Slue or Point Channel is not buoyed, and no stranger should attempt it; 15½ ft. can be carried through the Main Channel, and 7 ft. through the Slue at mean L.W. The beacons cannot be clearly distinguished from the outer buoy, and consequently afford no assistance in crossing the bar.

At Beaufort the mean rise and fall of tide is 2 ft. 8 in.; least depth on the bar 15 ft. 5 in.

The harbour of Beaufort may be taken with care, and affords perfect shelter from all winds.

The outer bar buoy is a black and white striped iron nun buoy, in 31½ ft. water.

Pilots can be obtained by hoisting a signal at the fore. Vessels should heave-to when off the S.E. spit, in 4 fms., convenient for entering, as soon as a pilot is on beard.

Bogue Inlet.—To the westward of Cape Lookout, about 30 miles, is Bogue Inlet, leading to Swansboro', and forming a communication with Pamplico Sound. Over the bar of this inlet there are 8 ft. water. W.S.W. ½ S. from Bogue Inlet, distant 9½ miles, is New River Inlet, on which there are also about 8 ft. water. Between

this inlet and Cape Fear there are several other inlets of similar description, and only used by small craft.

NEW INLET OF CAPE FEAR.—This inlet is between the sea coast and the N.E. end of Smith's Island. It will admit vessels drawing 6 ft., and is about 2 miles wide at its entrance, having 7 ft. water at low tide over the bar. It continues its breadth to the flat, and is navigable for large vessels 21 miles from its mouth and 20 miles to Wilmington, to which town vessels drawing 10 or 12 ft. can reach without any risk. S.S.E., 9 leagues from New Inlet, will lead into 12 fms. clear of the Frying Pan Shoals.

When approaching the coast of the Carolinas, it has been already advised to keep nearly a degree to the southward of the place you intend to make, until on the edge of the Gulf Stream, when you must be directed according to circumstances. This remark will apply equally in making the ports of the States of Georgia and Florida. In the present case, in making the coast of South Carolina, a vessel should not sail in westward to the northward of 33° 25′ if it is possible to avoid it, or 33° 30′ at the highest, until in 10 fms. water; in this depth she will be within the south end of the Frying Pan Shoals, which lie in lat. 33° 35′ N. and long. 77° 49′ W., and marked by a light-vessel. When approaching the coast in 33° 20′ the first soundings will be in 25 or 24 fms.; with this depth of water a vessel will be near the edge of the Gulf Stream. Thirty miles nearer the land in that parallel are 18 fms., sand and shells, and about 50 miles from the land 17 and 16 fms. fine grey sand, with black spots. Within this latter depth the soundings are pretty regular, decreasing gradually towards the shore, and in about 12 to 13 fms. there is a good fishing ground.

In steering west, a vessel will, for the first 15 or 18 miles, shoal water very little, and when into 14 fms. the depth decreases quicker, but gradually. If the weather be clear, the land will be seen from the depth of 12 fms., and a vessel may then be sure being within the Frying Pan Shoals. When to the eastward of these shoals, no land can be seen to the westward of N.W.

FRYING PAN SHOALS, OFF CAPE FEAR.—These shoals are exceedingly dangerous, and a great baulk to vessels coasting this part; they stretch out S.S.E. ½ E., 15 miles from the point of Cape Fear, and the shoal water across, within the 5 fms, line is 3½ miles in width, E. and W. The water within this space is very shallow, in some places not more than 7 to 8 and 9 ft. to the distance of 12 miles from the cape, and breakers may be observed at 10 and 12 miles from the same in a depth of 7½ and 9 ft. Beyond these breakers there is a flat of 4, 3, and 2½ fms., the last forming the south point of the shoals, and the position of which has already been given. Nearer to the cape, within 1½ mile, the water is much shoaler, and the bottom nearly dries. These shoals are marked by a light-vessel and four buoys, as follows:—

Light Vessel.—The Frying Pan Shoals light-vessel is schooner rigged, the hull painted yellow, with the words *Frying Pan Shoals* painted in large black letters on each side; lower masts yellow; topmasts white; one day-mark on each mast-head, black.

This vessel is moored in 10 fms. water, off the end of the Frying Pan Shoals, one mile beyond the outer 18 ft. shoal. She exhibits two fixed lights, one on each mast, at 40 ft. above the sea, which are visible 11 miles. The vessel is furnished with a fog bell and horn. Lat. 33° 35′ 0″ N., long. 77° 50′ 0″ W.

Buoys.—Two buoys mark the eastern side of the Frying Pan Shoals; these lie in a S.S.E. ¾ E. direction from the cape, the first at 4 miles distant, the second at 7½ miles. Two other buoys mark the western side of the shoals; the first lies S. by W. ¼ W., 3 miles, and the second S. ¾ E., 8½ miles from the point of Cape Fear; or both these buoys may be said to bear S.S.E. from Oak Island light-house of the main channel, the one 7 miles, the other 12½ miles distant. All four of these buoys lie within the 5 fms. line of depth.

The soundings on approaching the Frying Pan Shoals from the eastward are regular; but from the westward irregular.

Masters of vessels of heavy draught, in passing these dangerous shoals, should be careful to get casts of the lead at short intervals of time, and never run into less than 10 fms. water, if in a steamer, and 15 and 18 fms. in a sailing vessel.

Lights AT THE ENTRANCES, AND IN CAPE FEAR RIVER:—

FEDERAL POINT.—At the north side of New Inlet, in lat. 33° 57′ 34″ N., and long. 77° 55′ 11″ W., a white light-house, 50 ft. above the sea, showing a fixed light, visible 12 miles. This light is about 9 miles to the northward of the main entrance into the Cape Fear River at Bald Head.

CAPE FEAR RIVER.—On Oak Island to the northward of the main channel in lat. 33° 53′ 24″ N., and long. 78° 1′ 44″ W., two brick towers, coloured white, the one 33 ft. above the sea, the other 45 ft., each showing a fixed light, visible 12 miles. These two towers are surrounded by sand-hills, and the lights are designed to serve as a range for crossing the bar at Oak Island.

Directions.—WILMINGTON, NEW INLET BAR.—When in 5 fms. water, with Federal Point light bearing N.W. $\frac{1}{4}$ W., and the large house on Zeek's Island W. $\frac{3}{4}$ S., stand in on a W. by N. $\frac{1}{2}$ N. course, passing a few yards to the northward of the bar buoy, until Federal Point light bears N. $\frac{3}{4}$ E., when steer W.S.W., passing within 50 or 100 yards to the northward of the wharf on the N.W. end of Zeek's Island; then alter the course to S.W. $\frac{3}{4}$ W., leaving the buoy 10 yards to the northward. When half-way between this last-named buoy and the light-boat, anchor; or if bound up the river, steer N. by E. $\frac{1}{4}$ E. until abreast of the N.E. point of the Marsh Islands; the course is then N. by E. up the channel-way. The shoalest water in crossing New Inlet Bar is 8 ft. by the bar at mean L.W. Both the Western and New Inlet Bars are subject to frequent changes, and should not be attempted without a pilot.

WILMINGTON WESTERN BAR CHANNEL.—When in 4 fms. bring the high and low lights on Oak Island in range, and keep that range N.E. by N. passing either side of the buoy, until Bald Head bears E.S.E. and Cape Fear is open about 2 two ships' length to the southward of the S. end of Bald Head Point, when steer east until Bald Head bears S.E. by E., and the citadel in Fort Caswell N.N.E. $\frac{3}{4}$ E., then N.E. by E. $\frac{1}{4}$ E. until reaching 5 fms. When Bald Head bears S.S.E. $\frac{1}{2}$ E., steer N.N.W. $\frac{1}{4}$ W. which will clear the spit of battery Island. Having cleared the point of Battery Island and opened the river, anchor anywhere in mid-channel, abreast of Smithville. Eight feet can be carried in over the Bulkhead at mean L.W.

The Marshall Shoal is now connected with the Fingers, and has obliterated the Old Channel, over the Main Bar. The buoys have consequently been removed. H.W., F. and C. at Oak Island about 7 h. 30 min.; rise about 4 ft.

CURRENTS.—The currents on the coast of North Carolina are governed mostly by the wind; during the summer months the prevailing winds are south-westerly, and the currents then set in the direction of the coast to the eastward; and when the southerly winds cease blowing they change suddenly to the contrary direction, which is a sure precurser of a N.E. wind.

There are several buoys placed to mark the bars and entrances to Cape Fear River, but as a pilot is necessary, to enumerate them would be useless; however, it may be serviceable to notice that red buoys with even numbers must be left on the starboard hand entering; black, with odd numbers, must be left on the port.

FROM CAPE FEAR TO CHARLESTON.

From Cape Fear River to the entrance of Georgetown, or Winyar Bay, the bearing is S.W. $\frac{2}{3}$ W. and the distance 70 miles. The deep bight formed by these points is called Long Bay.

Little River Inlet lies 25 miles to the westward of Cape Fear light-house, and divides North from South Carolina. Lookwood's Folly lies about 13 miles westward of the cape. The land appears broken, and affords no safe harbour.

North Inlet of Georgetown lies 7½ miles to the northward of Georgetown light-house; its southern boundary is formed by the north end of North Island on which is a village, distinctly seen from the sea; there are also some houses on the opposite side. This inlet affords a safe harbour for small vessels, and there is a passage leading from it to Georgetown.

GEORGETOWN HARBOUR.—Georgetown entrance is 70 miles W. by S. $\frac{3}{4}$ S. from the light-vessel off the Frying Pan Shoals.

Light.—A light-house coloured white, is erected on a low sandy point at the south end of North Island and east side of the entrance to the Peedee River, and harbour of Georgetown. It is in lat. 33° 13′ 21″ N. and long. 79° 11′ W., the lantern is 85 ft. above the sea, showing a fixed light, visible 15 miles. A small fixed light is shown at Fort Point, at Georgetown.

The main light bears N. by W. ½ W. from the entrance of the S.E. Pass, 4½ miles distant. From the south-easternmost part of Cape Romain Shoals, to the entrance of the south bar, the course is N.N.E, and the distance 12½ miles.

Approaching Georgetown Bar from the northward, the harbour is shut from view by North Island; and the light-house appears situated in a low wood.

Vessels at sea will find deep water, and, with southerly or westerly winds, good anchorage near the land, about 1½ or 2 miles to the northward of the light-house. In passing the light, either northerly or southerly, vessels will find 5 fms. water within 5 miles of the land. S.S.E. ½ E., 4½ miles from the light-house is the East Bank, of 9 ft. to 2½ fms.

Directions.—The soundings on approaching Georgetown Bar are irregular, the land low, and unmarked by any distinctive scenery, consequently the light-house is the only guide for approaching the channels, and avoiding the East Bank Shoal. The changing character of the channels, and the total dependence on buoys, renders it unsafe for strangers to attempt the passage without a pilot.

There are but two channels now in use, the S.E. Pass, and the Bottle Channel; the former has 8 ft. at mean low water, and is the widest, safest and most generally used by the pilots. The Bottle Channel is a recent washing of the ebb current, and for the last three years has continued to improve in depth and directness; 7 ft. at mean low water can be found in it.

To take the S.E. Pass.—Coming from tha northward keep in 5 fms. water to avoid the East Bank, till the light-house bears N.N.W. and is in range with a large white-washed chimney on the point; then stand in on this course and range till up with the outer buoy, and keeping it on the starboard hand, steer N.W. for the middle buoy, which leave 20 yards on the starboard hand, and continue the same course till abreast of the inner buoy. Leaving the inner buoy on the port hand, steer N.N.W., passing about 10 yards to port of the buoy on the Fishing Bank, then steer N. by W. ¼ W. till the light-house bears S.E. by E., where there is anchorage in 4 and 5 fms. water, about 150 yards from North Island beach.

To take the Bottle Channel.—In 4 fms. water, bring the light-house to bear N.W. by W. ¼ W., and steer W.N.W., which brings up with the outer buoy; pass it close on either hand, and continue the course until up with the middle buoy, which must be kept close on the starboard hand in passing; then steer W. by N. till up with the inner buoy, passing a few yards to the starboard of it. The course will then be N.W. by W. ¾ W., till abreast of the buoy on the Fishing Bank, which

leave about 80 yards to the southward, and steer N. by W. ¾ W. for the anchorage. Due allowance must be made for the flood and ebb tides.

Between Georgetown entrance and Cape Romain lie the entrances to Santee River. Of these the southern one, which is the best, is about 7 miles from the entrance of Georgetown River and about the same distance from Cape Romain. Ships falling in with the shoals off Georgetown entrance, should not approach them in less than 7 fms. which will be about 7½ miles from the land. The muddy appearance of the water hereabout frequently alarms strangers, but there is no danger to be apprehended. The land is low, and appears, when seen from a distance, like a range of islands.

CAPE ROMAIN or Roman is very low land, having neither tree nor bush, and appears, when seen at a distance, to be a sand left dry by the tide.

Light.—The light-house of Cape Romain is erected on Racoon Cay, about 6 miles from the extremity of the shoals off the cape and 10 miles S.W. of the south entrance of the Santee River. This is a brick tower, in lat. 33° 1′ 8″ N. and long. 79° 22′ 23″ W., showing a revolving light, every minute, visible 18 miles. The lantern is 154 ft. above the level of the sea. The light from this tower should be seen 14 miles outside the shoals off Cape Romain.

The old tower stands near the new light-house ; it is white-washed.

The shoals off Cape Romain run S.E. about 6 miles from the light, and are about 1½ mile in width, and have but 6 ft. water on them ; the outer point has only 7 ft., with a Swash Channel of 2½ fms. between that and the cape, nearly 2 miles in width. Off the point of the shoals the depth decreases from 7 to 5 fms., then directly on the breakers.

Vessels of heavy draught should not approach Cape Romain within 8 fms. water, there being a 5 fms. bank outside of the shoals.

Vessels of light draught coming from the southward, and intending to run inside the shoals, will, when in 4½ fms. water, bring Cape Romain light-house and the old Mill in range, the south point of Cape Island bearing N. by E., then steer N.E., passing directly through the Slue.

These shoals are of a dangerous character, lying directly in the track of coasters. With moderate winds from N.E. or W. the sea does not break upon them, but with winds from S.W. round by S. and to E., they are shown by the breakers on the seaward side. A 6 ft. channel extends from the S.W., leading to the harbour inside the cape.

There is good anchorage during northerly winds S.W. of the light-house, with not less than 3 fms. water.

From the south entrance of Santee River, to 6 miles S.E. of Cape Romain, the shoal extends to a considerable distance from the land ; the S.E. point of it lies about 15 miles S. by W. from Georgetown light-house. Close to this dangerous shoal there are 4 and 3 fms., and the land is so low that it cannot be seen from the deck of a ship at the extremity of the shoal.

Racoon Cay on which the light-house is erected, as before observed, is to the westward of Cape Romain. It is a long, narrow island, and not visible until a near approach to it. Being abreast of Cape Romain Shoals, with the light bearing N.W. by W., distant 7 miles, a course clear of all the shoals off the coast to the Rattlesnake light-vessel off the entrance of Charleston will be S.W. by W., 28 miles. In this course a vessel will pass the wide opening of Bull's Bay, and clear of all the breakers and shoals off there. From the Rattlesnake light to off Charleston Bar the course is S.W. ½ W., distance 6 miles.

BULL'S BAY.—This bay lies between Racoon Cay and Bull's Island, and is about 19 miles north of Charleston ; 13 ft. can be carried across the bar at L.W., spring tides ; the rise and fall of which is 5¾ ft. ; the harbour is round near to Bull's Island, where a vessel may anchor in 3½ fms. water.

Light.—On the north end of Bull's Island in lat. 32° 55′ 20″ N., and long. 79° 33′ 55″ W., a light-house, on the Keeper's dwelling, 49 ft. above the level of the sea, showing a fixed light, visible 12 miles. The back-ground of the light-house is woody.

Buoy.—A can-buoy, with black and white stripes, in 2½ fms. L.W. off the bar at Bull's Bay; the north point of Bull's Island bearing N.W. by W. ½ W. To be passed close on either side.

To enter.—When in 6¼ fms. water, bring Bull's Bay light to bear N.W. by W. ½ W., stand in on this course, leaving the Bar buoy 250 yards on the starboard hand, until in 3½ fms., muddy bottom. This is a safe anchorage, and the channel way is clearly marked by the breakers on either hand.

On leaving the bay keep away until the outer spit is cleared, which bears S.E. by S. from the bluff part of Bull's Island, distant three-quarters of a mile.

When clear of the bar and bound to the northward, steer west from the light, full 15 miles before hauling up to the north-eastward; by this means a vessel will be well clear of Cape Romain Shoals, with a sufficient offing from the shoals off Charleston Bar. If bound southward from the anchorage of Bull's Harbour, steer E.S.E. from abreast of the light, full 5 miles past the buoy, into 5 fms. water, when S.S.W. ¾ W., 9½ miles, will bring the light on Bull's Island to bear north, a vessel will then be in the former track as from off the shoals of Cape Romain, and may steer S.W. by W. past the Rattlesnake light-vessel to off Charleston Bar.

RATTLESNAKE SHOAL is 1½ mile in length and one-eighth of a mile in breadth, and is marked at each end by a buoy; this shoal which has 6 ft. on it at mean low water lies 3 miles S.E. of the south end of Long Island.

Light-vessel.—Off Rattlesnake Shoal and opposite the north end of Sullivan's Island in 5½ fms. water. The hull of this vessel is painted white; masts yellow, and top-masts black, with two oval day-marks, painted black. Rattlesnake Shoals bearing N. by W., 2½ miles; Main Bar Channel S.W. by W. 6 miles. This vessel shows two fixed lights, visible 12 miles. Lat. 32° 44′ N., and long. 79° 43′ 45″ W.

CHARLESTON.—This is the chief city in the State of South Carolina, and was formerly the fifth in rank and importance in the United States. It is advantageously situated for commerce on the point of land between the Ashley and Cooper Rivers, which unite below the city. The harbour of Charleston is commodious when within it, it is exposed to easterly winds, but protected from the swell of the ocean by Sullivan's Island on the north, which is distant from the city about 3 miles, and by Morris Island to the south.

Lights.—Main Light.—On the south end of Morris Island, is a conical brick tower painted in black and white bands, the lantern is 158 ft. above the sea, and shows a fixed light, visible 18½ miles.

Morris Island Range Beacon Lights.—Two fixed red lights marking the line of range for crossing the bar of the "Main Ship," or "Pumpkin Hill" Channel into Charleston Harbour.

Sullivan Island Range Lights. Two fixed red lights on Sullivan Island Range, for the channel leading from the main ship channel to the harbour.

Fort Sumpter, a fixed white light, serves as a guide into Charleston Harbour.

Middle Ground.—A light-house is being built on the Middle Ground, between South Channel and Folly Island Channel, Charleston Harbour.

Castle Pinckney.—A fixed red light, which will be discontinued when the Middle Ground Light is established.

The front of the harbour is encompassed by an extensive plateau of shoal ground, over which were several channels, besides the Main Channel called the Bar, bearing S.W. by W. from the Rattlesnake light-vessel. This bar channel is marked by a black and white outer buoy, and a black buoy on the inner side of the bar. On

this bar the water is about 12 ft. at low tide, but it is said to be shifting to the southward and shoaling.

Beach Channel is close round the shore of Sullivan's Island, and marked by a black and white buoy at its eastern entrance.

The Swash Channel is the next to the southward from Beach Channel, and marked by buoys; the outer buoy lies in 10 ft.

S.W., 1½ mile from the Bar Channel is the southernmost of all the channels, it is marked by an outer black and middle red buoy. Sullivan's beacon lights serves for crossing this bar.

Charleston Bar Channel.—To cross the bar, upon which are 12 ft. water at low springs, bring Morris Island beacons in range, and steer a W. by N. ½ N. course, passing to the southward of the outer black and white buoy, until up with the black buoy No. 1, when change the course to W. ¼ S. for junction buoy, black and white stripes; when past this buoy Sullivan's Island beacons will be in range, this range should be followed until Fort Sumpter beacon bears west, the course is thence N.W. ½ W. into Rebellion Road.

The flood and ebb set across the bar; vessels drawing 12 to 14 ft. may cross after half flood, but should not attempt to cross after the first quarter ebb, as the tide falls more rapidly upon the bar at that time. Vessels drawing 15 and 16 ft. should cross the bar during the last quarter of the flood, and not wait for high water. There is good anchorage in 5 fms., at low water, outside the bar in line with Morris Island range beacons.

WINDS ON THE COAST OF SOUTH CAROLINA.

When the wind blows hard from the N.E. quarter, without rain, it commonly continues so for some time, perhaps for 3 or 4 days; but if such winds are attended with rain, they generally shift to the E., E.S.E., and S.E.

S.E. winds blow right in on the coast, but they seldom blow dry or continue long; in 6, 8, or 10 hours after their commencement the sky begins to look dirty, which soon produces rain. When it comes on to blow and rain very hard, you may be sure that the wind will fly round to the N.W. quarter, and blow hard for 20 to 30 hours, with a clear sky.

N.W. winds are always attended with clear weather; they sometimes blow very hard, but seldom last longer than 30 hours.

The most lasting winds are those which blow from the S.S.W. and W.N.W., and from the N. to E.N.E. When the wind is in any of these quarters the weather is the most settled.

Thunder-storms are very common on this coast in summer time; they always come from the N.W. quarter, and are sometimes so heavy, that no canvass can withstand their fury; they come on so suddenly, that the greatest precaution is necessary to guard against the effects of their violence.

The first appearance of these storms is a black heavy cloud, and the weather sultry, with little wind and variable. It is advisable at the appearance of these warnings to stand by, to clew up, and be ready to wear, as these gales come on so suddenly, as scarcely to allow of time to do more.

When the wind backs against the sun, with a drizzling rain, the sea will generally rise before the storm begins; then be prepared for a gale, which will often last 50 or 60 hours. If in the vicinity of Charleston or St. Augustine, and obliged to cut or slip, the best way will be to carry all the sail possible, and get out to sea before it acquires its fury, or otherwise a vessel will not be able to carry sail at all: and observe, the flood tide will carry out no further than 12 fms., and there she will have the advantage of the southern current, until into 45 fms., or about the distance of 15 leagues from the land; a vessel will then be in the Gulf Stream, which runs strongly along the edge of soundings.

FROM CHARLESTON BAR TO THE ENTRANCE OF PORT ROYAL.

From the Rattlesnake light-vessel, off the entrance of Charleston Harbour to off North Edisto Inlet, with the entrance N.W. by W., distant 5 miles, the course is S.W. and the distance 23 miles. This course will lead clear of the shoals off Stono Inlet, which lie further off the coast than any others in the course to Edisto River. Be careful not to break off more to the westward, as the ground shoals suddenly off the bar of Stono, at 2 miles from the land.

Stono Inlet is about 9 miles from the Bar channel of Charleston; between is Folly Island. With the Morris Island Main light-house open of Folly Land, a vessel will clear the Stono Shoals in 6 fms. water; but the light-house shut in with Folly Land, she will not have more than 5½ fms. off the shoals of Stono, which depth is close to the breakers, consequently she will be in danger. The breakers, unless the sea is smooth, will show the situation of the shoals. In Stono Inlet there are 4½ ft. at low water.

North Edisto Inlet.—From Stono Inlet to North Edisto Inlet the course is W.S.W., and the distance 10 miles; between, the soundings are regular, and the water shoals gradually on approaching the shore from the offing. The bar of North Edisto and the shoals contiguous to it lie off about 3 or 4 miles from the land. Close to the bar and shoals are 3 and 4 fms. water, and on the bar 12 ft. at mean low water.

South or Main Channel.—Off the entrance is a black and white buoy in 2½ fms. which bears S.S.E., distant 3 miles from the southern point of the entrance. From this buoy steer N. by W., 2⅝ miles, passing the red nun buoy close to, and keeping the inner black and white buoy on with a large gap in wood on Seabrook's Island. When within 100 yards of the inner buoy in 3 fms. at low water, haul up N.W. by N. for a large pine on the northern side of entrance; continue on that course until the water deepens to 5 fms., when you may keep the middle of the river up to the anchoring wharf at "Point of Pines."

Least water over the bar on above ranges, 12 ft., which will be found close to the red buoy. Mean rise and fall of tide, 5 ft 10 in.

East Channel.—Bring the southern side of the inlet to bear N.W. ¾ W., and run in on that bearing, keeping the inner black and white buoy on with the Tripod on Botany Bay Island, and both in the middle of an avenue cut through the woods behind the Tripod. This course is about 60 yards south of the red spar buoy on the bar, and carries 9 ft. water over the bar at low water. When up with the inner buoy, leave it on the port hand, and steer N.W. ¼ W. up the middle of the river.

South Edisto is 9 miles W.S.W. from North Edisto. The shore of the islands which lie between may be approached with the lead without danger, as the soundings decrease gradually. The bar should not be crossed without a pilot.

ST. HELENA SOUND.—The entrance to this sound lies between South Edisto Island and the northermost hunting Island; it is about 6 miles wide, and is full of sand-banks, many of which are dry at low water. No stranger should attempt the sound without a pilot. The S.E. or main channel is buoyed, and after strong N.W. winds there are usually 2 or 3 ft. less water on the bar than the general average.

Light.—On the north point of Hunting Island and south side of entrance to the sound, in lat. 32° 23′ 20″ N. and long. 80° 25′ 16″ W. a light-house coloured black and white, showing a revolving light every 30 seconds, visible 17 miles.

Combahee.—The light shown from the light-house on the S.E. point of Combahee Shoal has been discontinued, and the light-house fitted as a day beacon.

The breakers on the bar may be observed 5 miles S.E. of Hunting Island light-house, and within 2½ miles of the shore of St. Edisto Island, on the northern side of the sound.

This sound is said to be navigable for vessels drawing 15 or 16 ft. water, to a considerable distance within the entrance. Several navigable rivers empty themselves into this sound, viz.:—South Edisto, Ashepu, Combahee, Chehaw, Bull River, Corsaw and Morgan River, &c. Some of these rivers extend 200 miles up the country.

Bull River.—The loading ground is about 20 miles from St. Helena Bar, there is a depth of 22 ft. at the quays at spring tides, and 19½ at neaps. Vessels of any draft can lay afloat while loading. The cargo is brought alongside in lighters of 90 or 100 tons each.

From the entrance of St. Helena Sound, along the Hunting Islands to the light-vessel at Port Royal entrance, the course is S.W. ½ S., and the distance 22 miles, with 5 or 6 fms. water, and regular soundings.

PORT ROYAL HARBOUR.—This harbour has sufficient accommodation for large fleets within it, and 19½ ft. at mean low water may be found in the South Channel, and 19 ft. in the S.E. Channel. Mean rise and fall of tide 6½ ft. The town of Beaufort is about 21 miles within the bar.

Light-Vessel.—Martin's Industry.—This vessel is moored off the entrance of Port Royal, at about 15 miles to the eastward of Tybee light, and in lat. 32° 5′ 31″ N., long. 80° 35′ 13″ W.; is painted red, with the name in white letters on each side, and shows 2 fixed lights at 44 ft. above the sea, visible 12 miles. A fog bell and horn. This vessel is designed to guide vessels into Port Royal Harbour and along the coast, clear of danger, to the Tybee entrance.

Coming in from sea for Port Royal Harbour it is advisable to get into the latitude of the light-vessel, which will be also near the latitude of the southern point of Hilton Head Island. When within 45 miles, and steering west for it, the depth will be 26 or 24 fms. Continue this course until you make the land, which will be, if the weather be clear, at the distance of 18 miles in 12 to 9 fms. water. The land hereabout is generally low but the trees are high. Hilton Head is on the south side of the harbour of Port Royal, and is a higher bluff point than any hereabout. Vessels bound to Port Royal should make Tybee Island, as the light-house forms a conspicuous object to distinguish the coast by.

Coles Care is the shoal stretching 3 miles from the point of St. Philip's Island, on the northern side of entrance.

The North Breakers are 4½ miles from the same point, and in the same direction ; then the S.E. breakers at 7 miles from the point, and the shoal called Martin's Industry, between the S.E. breakers and the light-vessel. Some parts of the latter shoal has but 6 ft. over it at low water.

Gaskin Bank is on the western side of the south entrance, and has even less water than Martin's Industry, and is very dangerous, having continual breakers at low water. The flat to the northward of Gaskin Bank is termed the south breakers, and forms the western side of the entrance, to where it joins the Joiner's Bank, which stretches about 3½ miles from Hilton Head, and is about 4 miles S. by E. from St. Philip's Point. From this, the east end of the bank, it extends W.N.W. about 2½ miles and has 3½ fms. on it at low water.

From the light-ship, a large house, on the west end of Bay Point (east side of Port Royal Harbour) bears N. by W. ½ W., distant 10½ miles ; Tybee light-house, W. by S. ¾ S. ; distant 15 miles ; Entering buoy, south channel, W. by S. ¾ S. distant 2⅛ miles ; Entering buoy, S.E. channel, N.N.E. ½ E. 2⅜ miles ; large black buoy on S.E. end of Gaskin Bank, S.W. by W. ¾ W., distant 3⅛ miles.

Buoys.—All the buoys are on the Martin's Industry side of the channels. There are 4 red buoys in the south channel, to be left on the starboard hand entering, and 2 black buoys in the S.E. channel, to be left on the port hand on entering. The best sailing line for steamers is about a vessel's length from the buoys, on the side indicated by their colour.

A large black buoy is placed on the S.E. side of the Gaskin Bank, in 5 fms. Vessels coming from or going to the southward should not cross the shoal to the westward of this buoy.

The outer buoys in both channels are painted in perpendicular stripes, black and white. That at the entrance of the S.E. channel has a staff and cross, with the letters S.E. upon it, to distinguish it in thick weather from the outer buoy of the south channel, which has neither staff nor cross.

Vessels coming from the northward and steering for the light-ship, will make the outer or entering buoy of the S.E. channel on the starboard, 2½ miles before coming up with the light-ship.

Both the channels are marked by buoys, but the entrance is dangerous to take by those unacquainted with the navigation ; we, therefore, refrain from giving the courses from buoy to buoy, as they are very likely to be shifted and altered, leaving such for a pilot's assistance.

Range Beacons.—On Hilton Head Island, range beacons are to be built to light the entrance to Port Royal Harbour ; also on Parry Island, range beacons are to be built to guide vessels up the channel.

TIDES.—On the coast it is to be observed, that N.E., easterly, and S.E. winds, cause higher tides than other winds, and also in some degree alter their course. At Port Royal entrance the tide flows on F. and C. days of the moon, at a quarter past 8 o'clock. About 18 miles from the land, in 12 fms. water, the flood sets strongly to the southward, and the ebb to the northward ; farther off the shore there is no tide at all. Near to the entrance of the harbour is a strong indraught during flood tide, and an outset with the ebb.

FROM PORT ROYAL TO SAVANNAH.

TYBEE INLET lies about 12 miles W.S.W. from the entrance of Port Royal South Channel. Between is Hilton Head Island ; large, fertile, and well inhabited. From this island the Gaskin Bank extends about 6 miles in its broadest part. A vessel may proceed along this bank in 5 fms. water.

SAVANNAH.—Tybee Inlet is the entrance of Savannah River, and ships drawing 14 or 15 ft. water may go in at Tybee, and proceed through the Calibogue Sound to Beaufort in Port Royal Island, and from Beaufort vessels of 8 or 9 ft. water may go through land to Charleston. From Charleston vessels drawing 7 or 8 ft. water may go through land to the River Medway in Georgia, which lies 30 miles south of Savannah.

The CITY OF SAVANNAH is the largest town of importance in the state of Georgia, and was formerly the capital of the state, and stands on a bluff on the south side of the river, at 14 miles from its mouth. Vessels drawing 15 ft. can go up to the town ; but larger vessels drawing 18 ft. must stop about 2 miles below. The commerce is considerable, and the principal exports are maize, rice, cotton, and tobacco.

Savannah affords great facilities to vessels in distress, there being a dry dock capable of docking vessels 250 ft. in length, by 60 ft. over all, and everything necessary for repairing vessels. There are also two ways, capable of drawing up vessels of 300 tons.

Lights.—TYBEE.—On the north-east end of Tybee Island, at the south side of the entrance to Savannah, in lat. 32° 1′ 20″ N., and long. 80° 50′ 43″ W., a white light-house, 92 ft. in height, and 108 ft. above the sea, showing a fixed light, visible 18 miles. A guide to the entrance to Savannah river.

BEACON LIGHT.—At the point of Tybee Island, a little in front to the eastward of the main light, a white building, 49 ft. in height, and 65 ft. above the sea,

showing a fixed light, visible 13 miles. When these two lights come in one, they range a little to the north of the bar.

Calibogue Sound.—On the N.E. part of Daufuskie Island are two range lights to guide vessels into Calibogue Sound, from Tybee Roads.

Tybee Island Knoll light-vessel.—Off the knoll north of Tybee Island, showing a fixed light 30 ft. above the sea, visible 10 miles.

Cockspur Island Beacon Light.—On a knoll connected with the eastern end of Cockspur Island, a white light-house, 25 ft. above the sea, showing a fixed light, visible 10 miles.

Oyster Beds, Beacon Light.—On the Oyster Beds, opposite to Cockspur Island, to mark the South Channel, a white light-house, 35 ft. above the sea, showing a fixed red light, visible 11 miles.

Long Island.—Range lights are to be built on the south end of Long Island.

Fig Island Beacon Light.—On the east end of Fig Island, a white wooden building, 21 ft. in height, and 26 ft. above the sea, showing a fixed light, visible 10 miles, to guide vessels going up to the city.

Buoys.—There are two buoys on the bar, the outer one bearing E. $\frac{3}{4}$ S., $4\frac{1}{2}$ miles from Tybee light-house., and several others mark the channel, but these are of use only to the pilots and those acquainted, and best understood by a reference to the chart. There is a depth of 18 to 19 ft. at low water mean springs in the channel, as far as Tybee roadstead, and by steering from buoy to buoy a vessel will carry 16 ft. at low water. No stranger should attempt the bar without a pilot.

Directions.—When in 4 fms. outside the bar, with the Beacon open to the northward of Tybee light-house twice its width, and the light bearing W. by. N., steer W. $\frac{1}{4}$ N., leaving the outer buoy (a red one) about 300 yards to the northward; continue this course until Stoddard's House, and the inner buoy bear N.N.W. $\frac{3}{4}$ W., and are in range, when steer N.W. by W. $\frac{3}{4}$ W. till Tybee Beacon bears W.S.W. $\frac{1}{4}$ W.

If intending to anchor under Tybee Point, steer W. $\frac{1}{2}$ N. till the light-house bears about S.S.E., when anchor in from $3\frac{1}{2}$ to $4\frac{1}{2}$ fms., muddy bottom. But if bound higher up from the W.S.W. $\frac{1}{4}$ W. bearing of the beacon, steer W.N.W. $\frac{1}{2}$ W., leaving a black buoy on the tail of the "Middle" on the port hand; and when the light-house bears S.S.E. $\frac{1}{4}$ E. change the course to W. by N., keeping the light-vessel open to the port bow. Pass the light vessel on this course, and when Brick and Pulaski Beacons are in range, steer for them, passing to port of a red buoy, and deepening into 3 and $3\frac{1}{2}$ fms., when anchor, half way between the red buoy and the Brick Beacon.

Calibogue Sound.—Vessels coming up from Tybee Roads will bring the beacons in range, when Tybee main light bears S.W. by W.; the course is then N. $\frac{1}{2}$ W., keeping the beacons in range until Braddock Point is passed, then haul up N. by E. in mid-channel. Shoals lie in close proximity to the range line near the south end, and a strong current sets directly across it; $8\frac{1}{2}$ ft. can be carried through the channel where it crosses the shoal at low tide.

CHARLESTON BAR TO TYBEE.—The course from off the south channel of Charleston, to off Port Royal light-vessel will be S.W., and the distance 52 miles. In this track a vessel will have from 5 to 7 fms., and as she passes the light-vessel to the eastward she will clear the dangerous shoal called Martin's Industry. This shoal lies 8 miles from the sonth side of the entrance to Port Royal, which is the north side of Hilton Head Island, the highest land in sight; come no nearer than 7 fms., keeping the lead going; and in the night or thick weather, do not approach nearer than 10 fms. The tide of flood sets boldly In. In rounding the light-vessel a S.W. by W. $\frac{1}{2}$ W. course 12 miles, will lead to the bar buoy off Savannah or Tybee entrance. When to the southward of Hilton Head, the light-house on the northern point of the island of Tybee will be seen. If in the night be careful, after rounding the light-vessel, not to go nearer the Gaskin Bank than

5 fms. In fresh winds take a pilot abreast of the light-house, and in moderate winds just without the bar. In clear weather Tybee light may be seen at the distance of 16 miles. Shoal ground, with 6 or 7 fms. course shells, lies S.E., 14 or 15 miles from Tybee light.

FROM SAVANNAH TO ST. MARY'S RIVER.

WASSAW SOUND.—At the southern end of the Island of Tybee, is an inlet called Great Wassaw Sound, with only 12 ft. water on the bar.

Wassaw Bar is $8\frac{1}{4}$ miles S.W. $\frac{1}{2}$ S. from Tybee bar, and $19\frac{3}{4}$ miles S.W. $\frac{1}{4}$ W. from the light ship at Port Royal.

Buoys.—An outer black and white buoy is placed in 5 fms. off the entrance, and buoys also mark the channel up to the entrance of Wilmington River, but the navigation is too intricate for a stranger.

Besides Wassaw Sound there are several other inlets to the southward, as the Ossabaw, St. Catherine, and Sapelo Sounds ; these are all connected with each other, forming an extensive inland navigation for small craft, to the towns of Hardwick, Sunbury, Darien, &c. This latter town is a place of note, and is built upon the great river Alatamaha to the southward.

OSSABAW SOUND is the mouth of the Ogechee River, and has two channels over the bar at the entrance. The North Channel, leading into the mouth of the Vernon River, through which 8 ft. water can be taken ; and the South Channel, leading into the mouth of the Ogechee River, through which 17 ft. can be taken. Both these last depths can be taken up only to an anchorage inside of the bar, and the great North and East Banks.

North Channel to Vernon River. When in from $3\frac{1}{2}$ to 4 fms. water bring the south end of Great Wassaw Island to bear N.W. $\frac{1}{2}$ N., and the N.E. point of Ossabaw Island W. $\frac{1}{2}$ N., and the course over the bar is W.N.W. $\frac{1}{2}$ N. A black and white buoy is placed off the entrance. To go further up a local knowledge is required.

South Channel.—The south channel leading to Ogechee River is marked by a buoy, painted in black and white perpendicular stripes, and is moored in 5 fms., 19 miles S.W. by S. from Tybee Bar, and 28 miles S.W. $\frac{1}{4}$ S. from the light ship at Port Royal entrance.

On the southern point of entrance to the river and N.E. point of Ossabaw Island is Fort Seymour, with a flagstaff.

ST. CATHERINE'S SOUND, leading to Sunbury, has a bar at its entrance, but within it is water enough for large ships, and the harbour is safe and commodious. The bar lies about a mile to the southward of the north point of the island, and has 8 ft. water over it ; the channel is narrow and difficult, the sands becoming dry at each side ; it is, therefore, preferable for vessels bound to Newport or Sunbury to use the Ossabaw or Sapelo Channel, and proceed through the inland passage, which is neither dangerous nor intricate.

SAPELO INLET.—This inlet is between St. Catherine's and Sapelo Islands, and carries about 18 ft. at mean low water. On the southern point of St. Catherine's Islands are two mast-beacons with large barrels on top.

The outer bar buoy is a striped black and white buoy, in 18 ft. water, the beacons bearing W. $\frac{1}{2}$ N.; outer one a little to the northward of the inner, and Blackbeard Island north point W. by S. Inner bar buoy is a black can buoy in 20 ft. water, beacons bearing W. by N.; north point of Blackbeard Island W. $\frac{1}{2}$ S.

To enter the inlet get the outer beacon open about 3 handspikes' length to the north of the inner one, and steer nearly for the north end of Blackbeard Island, or W. $\frac{1}{2}$ S. Between the points of the island the water is deep.

DOBOY INLET leading to DARIEN.—The bar of Doboy Inlet or Sound lies

S. by W. ¾ W., 13 miles from Sapelo Bar, and is situate between the south end of Great Sapelo Island and the northern part of Wolf Island.

Lights.—On the south end of Sapelo Island in lat. 31° 23′ 28″ N., and long. 81° 17′ 7″ W., is a light-house 70 ft. in height, and 79 ft. above the sea, painted red and white in horizontal stripes, which shows a fixed light, varied by flashes every 45 seconds, and visible 14 miles.

Beacon Light.—A little to the S.E. of the main light is a beacon, painted brown, 25 ft. above the sea, showing a fixed light.

Beacon Lights on WOLF ISLAND.—These beacons are erected near the north end of Wolf Island and S.S.E. of Sapelo Island light. These beacons are painted one white, the other brown. They show fixed lights visible 9 miles.

Directions.—In making for the bar, you should keep in 5 fms. water till the light-house of Sapelo bears N.W. by W. ½ W. when you discern the outer buoy, which is moored in 3 fms. water. To run in bring the beacon light in range with the main light of Sapelo, and run for them until the outer or east beacon on Wolf Island bears S.W. by W. ½ W., when steer N.W. by W. ½ W. and keep in not less than 4 fms. water to the anchorage abreast of the Sapelo light-house. The water shoals gradually on the south side of the channel, but on the north side the breakers are steep-to.

Chimney Spit is bare at half-tide, and is a good guide to the anchorage.

The two beacon lights on Wolf Island, when in one, form a leading mark for the bar at the southern entrance.

Inside this buoy are other buoys, which, with the before mentioned leading marks, will guide through the channel.

ALTAMAHA OR LITTLE ST. SIMON'S SOUND lies about S.W. by S. ¼ S. from the entrance of Savannah, distant 47 miles; and from the light-vessel at the entrance of Port Royal, S.W. by S., 64 miles. The land is generally flat and level between, and the soundings generally decrease towards the shore; the depth will be from 5 to 7, and 8 fms., in proportion as the distance is increased from land.

FROM SAVANNAH TO ST. SIMON'S.—When Tybee light-house bears N.W., 10 miles distant, in 10 fms. water, the course to go clear of the shoals of St. Simon's, which stretch off E.S.E., 6 miles, will be S.W. by S., 60 miles. There are 4 or 5 fms close to these shoals, to avoid which come no nearer than 8 and 9 fms. The island of St. Simon's is on the north side of the sound or harbour of the same name, and may be known by four trees, standing thus † † † †. On the south side of the harbour lies Jekyl Island, on which are some remarkable trees, appearing like umbrellas, and therefore called the "Umbrella Trees." The beaches of St. Simon's and Jekyl Islands are white, and therefore remarkable.

ST. SIMON'S SOUND AND BRUNSWICK HARBOUR.—**Light.**—The light-house of St. Simon's is on the south end of St. Simon's Island, and the north side of the entrance to the Sound, in lat. 31° 8′ 2″ N.. and long. 81° 23′ 35″ W. This light-house, coloured white, is 108 ft. above the sea, showing a fixed light, varied by flashes alternately red and white, at intervals of one minute, visible 16 miles. Shoals extend from a point near the light-house, in a S.S.E. direction, about 5½ miles.

Directions.—Off the bar is a large black and white buoy, in 5 fms. water. From it steer N.W. by W. ¾ W., 3 miles nearly, to a large black can buoy, passing a black buoy midway on the course, and keeping the southern end of King's Cotton House, on with the tripod standing on the ruins of the light-house.

After passing the second black buoy, steer W. by N. ½ N., 3 miles to the anchorage, keeping the starboard shore aboard to avoid a dangerous shoal, called "Jekyl Spit," making off the N.E. point of Jekyl Island. A black spar buoy is moored in 3 fms. water, on the outer edge of this shoal, which is bare at very low water.

Anchor in from 4 to 7 fms. water, opposite King's Cotton House, on St. Simon's Island.

Fifteen feet, at mean low water will be found in the above course over the bar. Mean rise and fall of tide $6\frac{3}{4}$ feet. From the middle to the inner bar buoy the channel is narrow, with 12 ft. on the south and 9 ft. on the north side. The north bank is bare at very low water, from the inner buoy up.

If bound up to Brunswick, or the Turtle River, one must be acquainted with the navigation.

ST. ANDREW'S SOUND lies between Jekyl and Cumberland Islands, and has also a bar, with 11 ft. over it at low water. This is formed by two spits running out from the islands, and leads into the extensive inland navigation, which runs all along this part of America, and from which numerous rivers branch into the interior of the country.

Light.—On the north point of Little Cumberland Island, and south side of the entrance to St. Andrew's and the Satilla River, in lat. 30° 58′ 34″ N., and long. 81° 24′ 45″ W., a white light-house, 78 ft. above the sea, showing a fixed light visible 14 miles. E.S.E. from the light, distant 8 miles, there are 11 ft. water.

There are four buoys placed to mark the navigation, besides the buoy at the entrance of the Satilla River. The bar-buoy is in 19 ft. water at low tide, and must be left on the starboard hand entering. Little Cumberland light bearing W. by N. $\frac{1}{2}$ N.; south point of Jekyl, N.W. by W.

Directions.—In running for St. Andrew's Bar give the land a berth of about 8 miles, until the light bears W. by N. $\frac{1}{2}$ N., while in 4 fms. water. With the light on this bearing, the course will bring up to the bar buoy; then haul to the northward until the middle buoy, No. 4 is in range with the light (to avoid the two lumps in a direct line, W. by N. $\frac{1}{2}$ N., between the two buoys) when steer for it, passing it to the southward. From this buoy a N.W. by W. $\frac{1}{2}$ W. course will lead into the channel.

To run in, keep in not less than 6 fms. water, until the light-house bears as above, W. by N. $\frac{1}{2}$ N., then steer for it. When the south point of Jekyl Island bears N.W. $\frac{1}{2}$ W. steer N.W. by W. $\frac{1}{4}$ W. until the light-house bears W.S.W., then haul in for the anchorage under the N.W. end of Little Cumberland Island, and anchor when convenient. Crow Harbour lies about 30 miles up the Satilla River; about 23 miles above Crow Harbour is the town of Jefferson, where vessels drawing 12 ft. can go.

ST. MARY'S RIVER OR CUMBERLAND SOUND, or the entrance to St. Mary's River being the boundary dividing Georgia from Florida, lies between Cumberland and Amelia Islands, about 24 miles from the bar of St. Simon's, and nearly 90 miles from the entrance to Savannah. This is the most southern port of Georgia, and, like the other rivers, has long spits of sand issuing from its entrance, and projecting towards the sea.

Lights.—On the north end of Amelia Island, and south side of entrance to St. Mary's River, in lat. 30° 40′ 23″ N. and long. 81° 26′ 31″ W., a white light-house, 112 ft. above the sea, showing a revolving light every $1\frac{1}{2}$ minute, visible 16 miles.

Beacon Light.—In front of the main light, a small fixed light, to range with the main light.

North Beacon Lights.—On the north front of Amelia Island, to serve as a range for the channel, 35 and 53 ft. above the sea, the higher one white, and lower brown, visible 12 and 11 miles. Both fixed lights. These beacons are one-third of a mile apart, on a W. $\frac{3}{4}$ N. and E. $\frac{3}{4}$ S. bearing. The front beacon, is an open framework structure. The rear or inner beacon is on a wooden dwelling-house.

Amelia Bar has on it 14 ft. at low water. Spring tides rise $8\frac{1}{2}$ ft.; ordinary tides, 6 ft.

FERNANDINA.—**Buoys.**—Inside the bar to the southward, on the west shore of Amelia Island, is Fernandina. A large black and white buoy, carrying a staff and ball, is placed in 6 fms. off the bar.

Directions.—Going in from sea, bring the south beacons in range at the outer or sea buoy; keep on this range until the north beacons, which will gradually appear to approach each other are in range. From this point follow the range of the north beacons until up with red buoy No. 6, then steer N.W. for Kingsley's Bank buoy, black No. 1, leaving it on the port hand. Now change the course to W.N.W. until south front beacon bears S. ½ W.; haul up to west and steer on it until inside of Fort Clinch, where there is good anchorage 400 yards from the beach. Care should be taken to keep the vessel well in hand as the north beacons come together, as the turn is sharp, and there is danger of striking the shoal on the port hand. Attention is called to the fact that the north range beacons only mark a turning point in the channel for vessels entering the harbour of Fernandina, which at night sometimes cannot otherwise be found. Vessels cannot run in on this range.

Outside the bar a vessel may, if requisite, anchor in 7 or 8 fms., with the south part of Cumberland Island bearing W. by N. ½ N., or W. by N. but completely exposed to winds from seaward.

FROM ST. MARY'S RIVER TO ST. AUGUSTINE.

Nearly 15 miles to the southward, between Amelia and Talbot Islands, is the entrance to Nassau River; the shores of Amelia Island are even, low, and sandy; and at a moderate distance from the shore there are from 3 to 5 fms. but it will always be prudent to stand out and give the ends of the island a good berth.

The sands at the entrance of Nassau River, stretch 3 miles from the S.E. point of Amelia Island, and to a similar distance from the N.E. point of Talbot Island.

The tide rises about 4 ft., and runs strong, especially the ebb.

The bar of Nassau is composed of quicksand, and apt to change in strong gales from seaward or freshes out of the river, so that it is necessary to take a pilot.

Buoys.—The outer buoy of Nassau bar is a red nun buoy, No. 2 in 24 ft. water, north point of Talbot Island, bearing W. by N.; St. John's light S. by W. The inner buoy is a red iron nun buoy, No. 4, in 8 ft. water, north end of Talbot Island W. by N.: St. John's light S. ¼ W. The buoys will always be placed so as to be left on the starboard hand entering.

ST. JOHN'S RIVER.—The entrance of St. John's lies about 8 miles to the southward of Nassau River. In making this place when bound into St. Augustine it appears like a high round bluff, and from it the small craft, that run in along the land here, take their departure. On the north side of the harbour is Talbot's Island, full of trees, lying N. and S., and of similar height to the General's Mount. There are 9 ft. on the bar at high water; spring tides rise 5½ ft.; neap tides not more than 4 or 5 ft. The currents run out until quarter flood, and some half flood. H.W., F. and C. of the moon, about 7h. 28m., and the tides are very much influenced by the wind.

Lights.—Near the mouth of St. John's River and south side of entrance, in lat. 30° 23′ 37″ N., and long. 81° 25′ 32″ W., a light-house of red colour, 84 ft. above the sea, showing a fixed light, visible 15 miles. The town of Jacksonville is about 18 miles above the entrance of the river, on the northern side.

Off Dame's Point, about 11 miles below Jacksonville, is a screw-pile light-house on a shoal, showing a fixed light.

In running for the bar, keep in not less than 5 fms. until the light-house bears W. by S. ¾ S. In 1874 a new channel opened through the bar at the mouth of St.

John's River; it follows the line of the beach and opens well to the south. Vessels drawing 11½ ft. have been taken through the new channel.

Buoys.—Buoys are placed to mark the navigation of St. John's Bar and River; but as the bar, like that of Nassau, is constantly shifting, it should not be attempted without a pilot.

Between the Rivers St. John and St. Augustine, a distance of 30 miles S. by E. ¾ E., the shore is bold, and has 5 and 6 fms. within half a mile of it. When abreast of Cartel Point, which is the north point of the Bay of St. Augustine, the Island of Anastasia, on which is a light-house will come in sight.

The beach in the above distance is flat and straight, except a hill, 4 leagues S.S.E. from St. John's, which is a little higher than the rest of the sandhills. At this place are three springs of fresh water, called the Horse Guards, and is the first place from Long Bay, in South Carolina, where the inland navigation is interrupted; but the waters flow up St. Pablo's Creek from St. John's River to within 4 miles of St. Mark's or North River. The soundings are regular off the beach and the approach to the shore bold, the bottom generally a fine white sand. On coming up with the south end of the beach, give it a good berth, as St. Augustine Bar stretches a long way out.

There is said to be a bed of sunken rocks about 17 miles off the entrance of St. John's River, bearing nearly east, with 5 and 7 fms. near; but its existence is much doubted.

ST. AUGUSTINE is situated on the main, about 2 miles within the bar, immediately opposite to the inlet, and was formerly a place of some importance, and defended by a fort; but owing to the badness of the harbour, and to the shallow bar at its entrance, has of late declined.

The bar at the entrance of the harbour has, however, opened in a new place, rendering the passage more direct and easy than formerly. The depth on the bar at high water is 12 ft.; at half-tide 9 ft., and at low water 6½ ft. Besides which the bar is pointed out by the Bar buoy, a red iron conical buoy, in 21 ft. water. The inner buoy is a red wooden can buoy, in 8½ ft. water. Leave these buoys on the starboard hand on entering.

Light.—On the north end of Anastasia Island and south side of entrance to St. Augustine, in lat. 29° 53′ 13″ N., and long. 81° 17′ 8″ W., a light-house, painted black and white spiral bands, 165 ft. above the sea, showing a fixed light, varied by flashes every 3 minutes, and visible 19 miles.

Vessels coming from the northward will run down till the light-house bears W. by N., keeping in 3 fms. water.

In fine weather the pilots board vessels outside the bar. They will be on the bar with a flag, and a wave to the right or left will indicate whether the vessel is to proceed either to port or starboard. When the staff is erect the vessel will bear down for the pilot boat. If the wind be to the south bring the light to bear west; if moderate, come-to and anchor in from 7 to 9 fms. water, muddy bottom. All vessels bound to this port will show, when off the bar, how much water they draw by signal, hauling down the flag and hoisting it again equal to the number of feet they draw.

There appears to be a sunken rock in the offing hereabout, for the brig "Young Maria," while running between Amelia Island and St. Augustine, struck repeatedly on some rocky ground, and immediately dropped into 5 fms. water; but the precise position and extent of this danger is not known.

To anchor in the Bay of St. Augustine, bring the signal tower to bear S.W. ½ W., and the fort which stands to the northward of the tower W. ½ N.; the new barracks will then be open of the northernmost part of Anastasia Island; then bring up in 10 fms. water good holding ground; the northernmost land in sight will bear N.W. by N., the southernmost land S.S.E., and a vessel will be near the middle of

the bay, it being immaterial which way the ship be cast. But should she be too far to the northward or southward, there will be danger of casting the wrong way, and more so on the tide of flood, which sets strongly in the bay. If it should be likely to blow from the eastward, do not attempt to get under weigh whilst the tide of flood runs.

From the 1st of November to the last of February, the hardest gales that blow on this coast prevail, and in general from the N.N.E. to the S.S.E.; the wind any way easterly comes on very suddenly to a gale during the season above mentioned, and these gales give but very little warning.

REMARKS ON THE PASSAGE FROM EUROPE TO ST. AUGUSTINE.

Vessels bound from Europe to St. Augustine, would shorten their passage considerably by making the south end of Abaco, or Hole in the Rock (in lat. 25° 51′ 30″ N., and long. 77° 10′ 45′ W., on which is a rovolving light), and after rounding it steer west about 24 miles, or until in sight of the fixed light on the Stirrup Cays, which will be when the light bears W. ½ S., distant 14 miles ; from thence they may steer W. by N. past the revolving light on the Great Isaac into the Gulf Stream, taking care that after losing sight of the light on the Isaac to steer to the westward of north ; or may, after making the Stirrup Cay light, steer W.N.W. into the Gulf Stream ; the only precaution necessary will be to steer N.N.W. after clear of the Great Bahama Island, because the bank stretches N.N.W. nearly, and the currents set partly on the N.W. part of the bank, particularly near the Memory Rock.

Observe to give the west end of the Great Bahama Island, a good berth, not merely on account of the shoals, but lest with the wind hanging to the south-westward a vessel should be embayed between the S.W. point of the island and Settlement Point (the westernmost point). When clear of the Bahama there is great advantage by keeping in the stream. At Memory Rock the tide ebbs and flows about 5 ft.

PASSAGE FROM ST. AUGUSTINE TO NEW YORK.

From the Bay of St. Augustine steer N.E. (true) about 185 miles, and this course will run a vessel into the Gulf Stream, out of soundings ; then continue to steer N.E. (true) about 270 miles, until in the latitude of Cape Hatteras ; then N. by E. (true) about 240 miles to about lat. 39°, till on soundings in or near the latitude of the capes of Virginia. When in 20 to 25 fms. off these capes, a north course (true) about 75 miles, and keeping on soundings, look out for the high land and light-houses of Navesink, in lat. 40° 24′, and very remarkable, being the highest land on either side of the entrance of the harbour of New York. When having nearly made the distance before mentioned, be careful not to run in the night or thick weather, and come no nearer than 12 or 14 fms., until having a good bearing of the light-vessel and light at Sandy Hook.

All along the south-eastern coast of North America there is no tide farther from the shore than 10 or 12 fms. water ; from that depth unto the edge of soundings, the current sets to the southward, at the rate of a mile per hour ; when out of soundings a vessel will have the Gulf Stream bearing to the N.E. quarter ; the farther to the northward, the more easterly is its direction, but its rapidity decreases ; and when to the northward of 39° it sets nearly east.

SETTING OF THE TIDE ALONG SHORE FROM NEW YORK TO ST. AUGUSTINE.

	Flood.		Ebb.
From the west end of Long Island to Cape May	W. by S.	...	E. by N.
„ Cape Henlopen to Cape Charles.....	S. by W.	...	N. by E.
„ Cape Charles to Cape Hatteras	S.S.W.	...	N.N.E.
„ Cape Hatteras to Cape Lookout	S.W. by W.	...	N.E. by E.
„ Cape Lookout to Cape Fear...	S.W. by W.	...	N.E. by E.
„ Cape Fear to Cape Romain	W.S.W.	...	E.N.E.
„ Cape Romain to Charleston.....	W.S.W.	..	E.N.E.
„ Charleston to Tybee	W.S.W.	...	E.N.E.
„ Tybee to St. Simon's.....	S.S.W.	...	N.N.E.
„ St. Simon's to St. John's	S. by W.	...	N. by E.
„ St. John's to St. Augustine	South.	...	North.

FROM ST. AUGUSTINE TO CAPE FLORIDA.

MATANZAS.—At 5 leagues S.S.E. from the bar of St. Augustine, and at the south end of the island of St. Anastasia, is Matanzas Inlet, having a bar of only 8 ft. at high water. From St. Augustine to this place there is a channel of 5 ft., within St. Anastasia Island; this is the usual communication between the two places, so that few vessels enter the inlet of Matanzas from the sea.

This place is known from seaward by a fort, which, appearing white, may be seen on a clear day nearly 9 miles off. The tide flows at each end of the island, on full and change days, at half-past 7 o'clock.

From Matanzas Inlet the coast continues in the same direction, for 39 miles, to Mosquito Inlet, between which the beach continues nearly of the same appearance as to the northward; the coast moderately bold-to, the soundings regular, and the bottom sand, with now and then some shells, and green mud.

MOSQUITO INLET has 5 ft. on the bar at low water, and the rise of tide is 3½ ft. The town of Smyrna is within this inlet.

From Mosquito Inlet to Cape Canaveral there is an even smooth beach, except some bluffs, about 12 miles to the southward of Mosquito. There are regular soundings until up to the cape, but be careful to obtain a good offing hereabout, for should the winds from the E.N.E. to S.E. come on to blow violently for any continuance, a vessel will find some difficulty to avoid running among the numerous dangers which environ the cape. The shores all the way from Mosquito Inlet are flat, and covered with trees.

CAPE CANAVERAL.—Light.—On the N.E. pitch of the cape a light-house is erected, in lat. 28° 27′ 38″ N., and long. 80° 31′ 36″ W., painted black and white horizontal bands, 139 ft. above the sea, showing a revolving light every minute, visible 18 miles.

DANGEROUS SHOALS OFF THE CAPE.—From the cape a dangerous reef of sand extends to the S.E. about 6¾ miles, and breaks at that distance, being a considerable width across. The Hetzel Shoal lies N.E. by N., 11½ miles from the light-house; the Ohio Shoal, N.E. ½ N., 11½ miles; the Bull Shoal, N.E. by E. ½ E., 6¼ miles. There appears to be a passage between the latter shoal and the cape of 7 fms., but no one should attempt it until better or more fully explored.

THE BANK OF SOUNDINGS off Cape Canaveral is very steep; a vessel will have 30 fms. water at 27 miles eastward of the cape, and immediately fall off the bank and be in the Gulf Stream, where the temperature of the water is 84° or 85° in August or September. Here there is no bottom with 100 fms.; at 15 miles east of the cape are 20 fms., broken shells and at 9 miles off, 10 fms. black sand. To the northward of the cape the bank of soundings sets much broader, so that in 29° an extensive flat of 8 to 12 fms. runs off the beach, full 30 miles; beyond which are 40 and 47 fms. fine black sand, and at 55 miles from the land, in this parallel;

this latter depth is near the steep edge of the bank. When approaching Cape Canaveral, the lead should be kept going; and when in 18 or 20 fms. a vessel will be 15 miles from the cape, when in the parallel of it.

From off Cape Canaveral, with the light-house bearing W.S.W. or W., distant about 12 miles, the course and distance to Indian River Inlet is S. ½ E., 55 or 60 miles. The land to the southward of the cape curves inward, and this part of the coast is flat and dangerous, but is remarkable from the immense number of palm trees, within the inlets the tides run strong. The river St. Sebastian, and other rivers, empty into the Indian River.

From the northern side of the entrance to Indian River Inlet, a reef of rocks runs along shore to the northward, full 21 miles, extending 2 miles off the land, and a flat of 1½ to 2½ fms. continues past St. Sebastian's River; but to the northward of this, and in the bight to the southward of Cape Canaveral, and its shoals, there are 7 to 8 fms. mud, pretty close in. Vessels intending to lie under the cape in northerly or westerly winds, should bring the light-house to bear N.E., and anchor in 15 or 17 ft. water, about one-third of a mile from the beach. To the northward of Indian River Inlet are several hummocks, called the Tortolas.

To the southward of Cape Canaveral, and nearly on the parallel of 28°, and as far out as 10 miles from the land, there are said to be some shoal spots nearly dry, as there are also further to the southward, between India River Inlet and Gilbert Inlet; but the positions of these are very uncertain. They are marked on the charts, which it would be well to closely examine.

St. Lucie Shoal of 16 ft. is dangerous, lying in the route of coasting steamers; it extends N.N.W. and S.S.E., and lies about 25 miles N. by W. from Jupiter Inlet light-house; its north end is in lat. 27° 22′ 18″ N., long. 80° 9′ W.

Gilbert Bar, which is the inlet to the River St. Lucie, lies S. by E., distant 16 miles from India River Inlet. This bar is in lat. 27° 8′ N., and long. 80° 9′ W. St. Lucie Inlet and Gilbert Bar are now closed. Between this bar and Indian River Inlet the soundings of 6 and 7 fms. extend 5 miles from the land, and the bank of soundings extend only 20 miles off, and thence into the Gulf Stream.

JUPITER INLET lies about 12 miles S.E. by S. of Gilbert Bar, and within the inlet is the river and fort of the same name.

Light.—At Jupiter Inlet, in lat. 26° 55′ 26″ N., and long. 80° 5′ 5″ W., is a light-house of red brick, 146 ft. above the sea, showing a fixed light, varied every minute and a half by a brilliant flash. The flash is preceded and followed by partial eclipses, visible 19 miles.

To the southward of Jupiter Inlet are three hills, and southward of these, about midway between Jupiter and Hilsboro', is Cooper's Hill. Abreast of this inlet the bank of soundings extends about 10 miles from the shore.

HILSBORO' INLET lies 35 miles to the southward of Jupiter Inlet; the coast runs S. by E. ½ E., 16 miles, then south 20 miles. Within the entrance is Hilsboro' River. About 14 miles to the northward of Hilsboro' Inlet the bank of soundings becomes very narrow, and from hence, southward to the Fowey Rocks, the Gulf Stream runs parallel with the shore, and very near it, in about the meridian of 80°.

Vessels bound to the southward should keep close in after passing Cooper's Hill, to avoid the Gulf Stream, which approaches near to the beach in some places; the colour of the water, changes from a muddy green to a fine blue. From Cooper's Hill to Middle River, which is 5 miles southward of Hilsboro' Inlet, the shore is bold, and a vessel bound southward may keep within half-a-mile of the shore; the water is deep close in, but in the event of a calm it may be necessary to anchor to prevent being driven back.

NEW RIVER INLET lies 9 miles S. ½ E. from Middle River; within this inlet is Fort Lauderdale.

From New River Inlet to Boca Ratones the coast runs S. ½ W., 24 miles. The coast is full of sandy hillocks, covered with shrubs and trees; it is flat and should be approached with caution. The shore is rocky, and to the northward and southward of the New River Inlet shoal water extends off a considerable distance, which renders the channel between the rocks and the inner edge of the Gulf Stream very narrow, and which must be particularly attended to by vessels bound to the southward.

SHIPWRECKS.—In case of shipwreck near Cape Florida and the Boca Ratones there is a settlement on the mainland, near the banks of a river, where assistance may be obtained; and by passing through the Boca Ratones, if in boats, the houses will be perceived ahead on the main. If cast away to the northward of Boca Ratones, there are some mangroves thinly scattered, about 2 miles from the Boca, from whence the houses may be seen, and upon making a signal with fire, or otherwise, assistance may be obtained. If to the southward of the New River Inlet, proceed southerly along the beach, where there are posts fixed along the shore, 4 miles from each other, on which are inscriptions in English, French and Spanish, informing where wells of fresh water are to be found.

CAPE FLORIDA.—Light.—On the south point of Cay Biscayne, in lat. 25° 39′ 56″ N. and long. 80° 9′ 21″ W. is a white light-house, 100 ft. above the sea, showing a fixed light, visible 16 miles. This light-house is about 5½ miles S. ¼ W. of Boca Ratones, and 4 miles from Bear Cut, which is the first opening to the northward of the light-house; within Cay Biscayne, on the main, stands Fort Dallas, and also a settlement. Besides the watering places on or near Biscayne the beach will, in almost every part, yield drinkable water by digging, provided the sand does not cover the clay; whenever clay appears, labour is useless.

The shores of this coast are lined with a bank of regular soundings, which run off a considerable distance; and this regularity of soundings extends from Cape Florida to Cape Canaveral. The soundings off Cape Canaveral, with that cape bearing W. by S., are 10, 20, and 39 fms., at ten, twenty, and thirty miles distance.

From St. Augustine the coast runs about S.E. by S. ¼ S. to Cape Canaveral, from thence S. by E. ½ E. to Jupiter Inlet, and then S. ¼ E. to Cape Florida.

Bound south from St. Augustine, steer S.E, 90 miles, which will bring a vessel to where the light on Cape Canaveral will be S.W. 22 miles. Keep in not less than 13 fms. in passing round the shoals of Cape Canaveral. From thence the course is S. ½ E, 103 miles to Jupiter Inlet.

STEAM VESSELS bound to the southward may set their course (true) from Cape Hatteras S. 46° W., 360 miles to long. 80° 20′, lat. 31°; from 80° 20′ to Canaveral S. 153 miles; from Canaveral to Jupiter Inlet S. 9° E. 90 miles; from Jupiter to New River Inlet S. 5° E. 50 miles; from New River Inlet S. 8° W. 65 miles; past Cape Florida and Carysfort lights, the latter bearing N.W. (true) 8 miles distant; from the last position steer S. 45° W. 34 miles; then S. 67½° W. 37 miles up to Sombrero, and from Sombrero bearing N.N.E. (true), 9 miles distant, steer S. 30° W. 100 miles to make Havana; be cautious, however, in crossing the Florida Strait, remembering that the Stream sets to the eastward at the rate of one knot per hour and upwards.

FLORIDA REEF.

The Florida Reef is an extensive and dangerous collection of sand, rocks, and low islands, running along the western side of the Strait of Florida, from Cape Florida to beyond the 83° of longitude, and sweeps round to the westward in a semi-circular direction, having numerous passages between the rocks and islands.

The islands upon this reef are called the Martyrs, and may be divided into two classes:—the High Islands and the Low and Drowned Islands. The High Islands are grounded upon rocks, some grey, some white, and some black, as hard as flint; and the Low (that is, the Mangrove Islands), are founded on coral rocks, all covered

with rich but wet soil. The High Islands are covered in places with sand, on which little or nothing grows ; and in other places they have a stratum of bluish marl. Great quantities of fish, as well as turtle, are caught amongst these islands.

CAY WEST in the longitude of 81° 47′, is the principal place on these islands, and formed a Maritime Prize Court during the civil war. It is well lighted and buoyed, and forms a secure harbour when moored therein.

There are several openings or inlets or outlets over the reef, most of which are safe communication between the Hawke Channel and Florida Stream.

CARYSFORT TO TORTUGAS.—From Carysfort light the course to run parallel to the reef is S.S.W. (Mag.) 22 miles, this will bring a vessel abreast of the Pickles Reef (marked with beacon F), and nearly up with Conch Reef (E) ; thence steer S.W. by W.; 32 miles past Viper Cay, to long. 80° 50′; then W.S.W., 45 miles to beacon A on Cay Sambo (on this course after running 15 miles a vessel will be abreast of Cay Sombrero and light-house) ; from beacon A steer W. by S. for 50 miles, when shape a course to pass between the Tortugas and the reef, or around the Tortugas. Twelve miles on this latter course will be abreast of Sand Cay light at the entrance to Cay West harbour. The passage between the Tortugas and the reef is safe, as there is only the **Rebecca Shoal** of 14 ft., which bears east, 20 miles from Loggerhead Cay. Between the shoal and the Tortugas Bank (east Cay), there is a channel, 12 miles in width. During the U. S. Coast Survey a shoal of 13 ft. was discovered 2½ miles to the north of Rebecca Shoal, which there is little doubt is a continuation of that shoal. On the Rebecca Shoal is a beacon.

During the U. S. Coast Survey of these reefs, signals were placed on the reefs ; since which day-marks have been erected to occupy the positions. They are each composed of an iron shaft, 36 ft. in height, erected upon iron screw foundations, distinguished by a vane, upon which one of the letters of the alphabet, or numeral figure is painted, and above it a lattice-work, hoop-iron cylinder or barrel.

Three colours (white, black, and red) are used in painting each signal to render them as striking to the eye as possible, and are so arranged that no two adjacent day-marks have the same colours upon like parts.

The day-marks are placed upon the most projecting and dangerous points of the Florida Reef, and are in general from 4 to 6 miles from the outside (seaward) shores of the Florida Cays, and within half a mile, in every case, of the edge of the Gulf Stream.

The water where these signals stand does not exceed 4 ft. at low tide, in any case, and just outside them to the eastward in the Gulf Stream, it falls into deep water ; so that they may be said to be erected on the very edge of the wall of this reef.

A vessel may approach any of these day-marks from seaward within a few hundred yards, but it will always be prudent to give them a good berth, particularly in light winds, or in bad weather. In steering the courses along the edge of the reef be cautious, in moderate weather, and especially after easterly gales, that the force and direction of the Gulf Stream setting across the reefs does not imperceptibly set the vessel amidst the dangers. Should a vessel be to the westward of any of these beacons, she is between the reef and the cays, and consequently surrounded by shoals and dangerous rocks.

A representation of these beacons is placed upon the charts of this part, and a table of latitude and longitude of their position and other particulars ; and masters of vessels may ascertain their latitude and longitude with tolerable certainty by examining closely the colour of the beacons as they are approached, and if the letter or figure on the vane is distinguished, there can be no mistake in determining their position.

When any beacon is carried away by storm, or otherwise, it will be replaced as quickly as possible.

The following is a list of the above beacon marks, in which is included the light-houses on the reef.

Light.—Cape Florida.—This light-house, already described, is erected on the south point of Cay Biscayne. It shows a fixed light, visible 16 miles.

Fowey Rocks *Beacon.*—Letter P painted red on the vane; hoop-iron lattice-work cylinder, white shaft and vane black. Bears from Cape Florida light-house S. 35° 42′ E. (true), 5½ miles; from Soldier Cay S. 89° 58′ E. (true), 3½ miles. Lat. 25° 35′ 23″, long. 80° 5′ 51″. A light-house is in course of erection on Fowey Rocks.

Triumph Reef *Beacon.*—Letter O, painted black, on the vane; cylinder red; shaft and vane, white. Bears from Elliott Cay, No. 1, S. 82° 31′ E. (true), 3½ miles; from Soldier Cay S. 21° 4′ E. (true), 7¼ miles. Lat. 25° 28′ 37″, long. 80° 6′ 50″.

Long Reef *Beacon.*—Letter N, painted white on vane, cylinder black, shaft and vane red. Bears from Elliott Cay No. 1, S. 52° 15′ E. (true), 3¾ miles; from Soldier Cay S. 13° 54′ E. (true), $8\frac{3}{10}$ miles. Lat. 25° 26′ 45″, long. 60° 7′ 21″.

Ajax Reef *Beacon.*—Letter M., painted red, on vane; cylinder white, shaft and vane black. Bears from Elliott Cay No. 2, S. 79° 36′ E. (true), $3\frac{9}{10}$ miles; from Elliott Cay No. 1, S. 26° 6′ E. (true), $5\frac{4}{10}$ miles. Lat. 25° 24′ 9″, Long. 80° 7′ 59″

Pacific Reef *Beacon.*—Letter L., painted black on vane, cylinder red; shaft and vane white. Bears from Rhodes Cay N. 76° 30′ E. (true), 5½ miles.; from Elliott Cay No. 1, S. 15° 48′ E. (true), $7\frac{1}{10}$ miles. Lat. 25° 22′ 13″, long. 80° 8′ 30″.

Turtle Harbour *Beacon*—Marked by a cross +—on the west side of Turtle Harbour. Lat. 25° 17′ N., long. 80° 14′ W.

Turtle Reef *Beacon.*—Letter K, painted white on vane, cylinder black,; shaft and vane red. Bears from Rhodes Cay S. 22° 21′ E. (true), $4\frac{4}{10}$ miles; from Ceasar's Creek Bank S. 6° 28′ W. (true), $6\frac{1}{10}$ miles. Lat. 25° 16′ 52″, long 80° 12′ 34″.

Light.—On Carysfort Reef, near the edge of the Gulf Stream, in lat. 25° 13′ 15″ N., and long. 80° 12′ 42″ W., an iron-pile light-house, tower and keeper's dwelling painted a brown colour, 106 ft. above the level of the sea, showing a revolving light every 30 seconds, visible 17 miles.

The Elbow *Beacon.*—Letter J, painted red on vane, cylinder white, shaft and vane black. Bears from Grecian Shoals Beacon N. 60° 46′ E. (true), $2\frac{4}{10}$ miles; from Carysfort Reef light-house, S. 29° 30′ W. (true) $5\frac{4}{10}$ miles. Lat. 25° 8′ 32″, long. 80° 15′ 40″.

Grecian Shoals *Beacon.*—Letter H on vane, painted black, cylinder red, shaft and vane white. Bears from Sound Point S. 45° 58′ E. (true), $3\frac{9}{10}$ miles; from Basin Bank S. 21° 25′ W. (true), $5\frac{3}{10}$ miles. Lat. 25° 7′ 22″, long. 80° 17′ 57″

French Reef *Beacon.*—Letter G on vane, painted white, cylinder black, shaft and vane red. Bears from Lower Sound Point S. 32° 34′ E. (true), 5 miles; from Point Willie S. 10° 30′ E. (true), $6\frac{2}{10}$ miles. Lat. 25° 2′ 6″, long. 80° 21′ 5″.

Pickles Reef *Beacon.*—Letter F painted on vane red, cylinder white, shaft and vane black. Bears from Point Charles S. 16° 58′ E. (true), $5\frac{4}{10}$ miles; from Lower Sound Point S. 6° 35′ W. (true), about 7 miles. Lat. 24° 59′ 22″, long. 80° 24′ 55″.

Conch Reef *Beacon.*—Letter E painted on vane black, cylinder red, shaft and vane white. Bears from Rodrigues Bank S. 4° 30′ W. (true), from Cay Tavernier S. 43° 33′ E. (true). Lat. 24° 56′ 36″, long. 80° 27′ 50″.

Crocker's Reef *Beacon.*—Letter D painted on vane white, cylinder black, shaft and vane red. Bears from Snake Creek Point S. 39° 15′ E. (true) distant 4 to 5 miles. Lat. 24° 54′ 21″, long. 80° 31′ 26″.

Alligator Reef **Light.**—An iron-pile light-house is erected on the N.E. point

of Alligator Reef, in 5ft. water, and within 200 yards of the deep water of the gulf. The light flashes every 5 seconds, and every sixth flash is red, visible 18 miles. Lat. 24° 51′ 2″ N., long. 80° 37′ 8″ W. Vessels in the gulf stream, approaching Alligator Reef light from northward and eastward, should not bring it to bear more to the southward than S.W. by W.; and approaching from southward and westward, it should not bear more eastward than N.E. $\frac{1}{4}$ E.

Tennessee Reef *Beacon*, figure 7, in lat 24° 46′ N., long., 80° 46′ W.

Coffins Patches *Beacon.*—Letter C, painted on vane red, cylinder white, shaft and vane black. Bears from Sombrero Cay light-house E.N.E. distant about 8 miles. Lat. 24° 41′, long. 81° W.

Sombrero Cay **Light.**—In lat. 24° 37′ 36″ N., and long. 81° 6′ 40″ W., is an open frame work of iron, built on iron piles, 144 ft. above the level of the sea, showing a fixed light, visible 19 miles.

Looe Cay *Beacon*, figure 6, in lat. 24° 33′ N., long. 81° 24′ W.

American Shoals *Beacon.*—Letter B on vane black, cylinder red, shaft and vane white. Bears from Loggerhead Cay S. 22° 17′ W. (true), $5\frac{9}{10}$ miles; from Eastern Sambo Beacon N. 76° 39′ (true), $8\frac{1}{10}$ miles. Lat. 24° 31′ 24″, long. 81° 31′ 16″.

Eastern Sambo *Beacon.*—Letter A, painted on vane white, cylinder black, shaft and vane red, Bears from Geiger's House S. 3° 29′ E (true), about $4\frac{1}{2}$ miles; from South Saddle Hills S. 13° 13′ W. (true), distant 5 miles. Lat. 24° 29′ 32″, long. 81° 39′ 55″.

East Channel *Beacon*, figure 5, on a shoal, west side of East Channel, in lat. 24° 28′ N. long. 81° 46′ W.

Eastern Dry Rocks *Beacon*, figure 4, in lat. 24° 28′ N., long., 81° 51′ W.

Middle Ground *Beacon*, figure 3, in lat. 24° 29′ N. long. 81° 53′ W.

Western Dry Rocks *Beacon*, figure 2, in lat. 24° 27′ N., long., 81° 56′ W.

Rebecca Shoal *Beacon*, figure 1, in lat. 24° 35′ N., long., 82° 35′ W.

Sand Cay.—**Light.**—On a small sand and shells island, $7\frac{1}{4}$ miles from Cay West light-house in lat. 24° 27′ 10″ N. and long. 81° 52′ 40″ W., an iron pile light-house, painted brown, and lantern white, it is 110 ft. above the level of sea, and shows a fixed light, varied by flashes every 2 minutes, visible 17 miles. It shows for a space of 1 minute a clear steady light; in every alternate minute there is a brilliant flash of 10 seconds duration, preceded and followed by partial eclipses of 25 seconds duration.

Cay West.—**Harbour Lights.**—On Cay West Island to the southward and eastward of the town, in lat. 24° 32′ 58″ N., and long. 81° 48′ 4″ W., a white light-house, 72 ft. above the sea, showing a fixed light visible 14 miles. This light serves to guide vessels to Cay West through the different channels across the reef, and also inside of the reef.

N.W. Passage.—An iron screw pile light-house placed on the flats to mark the channel of the bar leading to N.W. channel in lat. 24° 37′ 4″ N., long. 81° 53′ 58″ W. The foundation of the structure is red, dwelling and lantern white. It is 40 ft. above the sea and exhibits a fixed light, visible 12 miles.

Dry Tortugas.—**Light.**—On Loggerhead Cay, the S.-westernmost cay of the Tortugas Group, in lat. 24° 38′ 4″ N., and long. 82° 55′ 43″ W., a circular brick tower 152 ft. above the sea, showing a fixed light visible 19 miles. The keeper's dwelling is two stories high, built of brick, and placed a little south of the tower. Loggerhead Cay is nearly one mile in length, N.E. and S.W., and 700 ft. wide, bordered all round with cedar bushes.

Dry Tortugas.—**Harbour Light.**—At Fort Jefferson on Garden Cay, in lat. 24° 37′ 46″ N., and long. 82° 52′ 50″ W., a brown light-house, 70 ft. above the sea, showing a fixed light, visible 14 miles.

Directions.—Vessels bound into Cay Biscayne from the north to Legaré Anchorage, through what is called the Hawke Channel, may run in with the beach, until within 1½ mile of Bear Cut (which is the first opening north of Biscayne, 4 miles from the light-house), but be careful not to get into less than 3 fms. When fairly abreast of Bear Cut, steer south, 5 miles to where Cape Florida light will bear W.N.W.; then S. ½ E., 5½ miles close to the westward of the Fowey Rocks. In this course with the Fowey beacon bearing east and the Soldier Cay W. ¾ S., are 4 fms. water, and a vessel will have 2 miles of the above course to run, until abreast of the Brewster Reef; from thence S. ¼ W. for 4 miles will lead to Legaré Anchorage, in about 4½ fms., with the Triumph Reef beacon bearing S.E. by E. ½ E., distant a little over a mile. In the latter course a vessel will pass a buoy moored on a rocky patch on the port hand, about 1¼ mile from the position of the anchorage pointed out.

A vessel may also enter the reef to the southward of Bear Cut, by getting the light-house of Cape Florida to bear W. by S., and going in with 4½ to 4 fms., and when within 2 miles of the light-house steer S. ½ E. as above, until the Fowey beacon bears E. No one but those well acquainted can navigate through the inner reef to the shallow bay of Cay Biscayne.

LEGARE ANCHORAGE is within, and to the westward of Triumph Reef, in lat. 25° 29′ 15″, long. 80° 7′ 45″, and N.W. by W. ¼ W., 1 mile from the beacon on the reef. Vessels outside the reef from the northward, and bound into the anchorage, when about midway between the beacons P and O, with the beacon P, on Fowey Reef bearing N. by W. ½ W., may steer S.W. by W. ¾ W. for the passage between the Star Reefs, and run on that course half-way through it, then haul up to S.W. and steer for the anchorage behind the Star Reefs. The passage is 130 yards wide, with 22 ft. water.

When Beacon O bears S.W. ¾ S., distant 1¾ mile, steer either N.W. ½ N. to the anchorage behind the Star Reefs, through a passage 500 yards wide, with 22 ft. of water, or W. ¼ S. to the anchorage, behind the reefs N.W. from Triumph Reef, through a passage 220 yards wide, with 22 ft. of water. In running for this last named anchorage, the range of the beacons O and N will be passed, and when they are in one, the course for the Legaré Anchorage is S.W. by W., through a passage 800 yards wide, with 20 ft. of water.

With Beacon O bearing S.S.W. ½ W., about 2 miles distant, steer S.W. by W. until the beacons O and P. are in line, then follow the S.W. by W. course as before.

When bound into Legaré Anchorage from the southward, get the following bearings:—Beacon N, on Long Reef, west distant 1 mile, and beacon O, on Triumph Reef, N. by W. ½ W., distant 2 miles and a N.W. by N. course will lead to the anchorage, through a passage 600 ft. wide, with 22 ft. water.

There is a navigation still further to the westward, on the side of Bache Shoal and Reefs, near to Elliott Cay, in shallower water, 2½ to 2¼ fms., but it is too intricate for directions to be of service.

TURTLE HARBOUR.—The next available anchorage to the southward of Legaré is Turtle Harbour. This harbour is formed by the reefs, at about 4 miles north of Carysfort Light-house, it is easy of access, with 26 ft. depth at the entrance of the channel.

With Carysfort Light-house bearing S. ¾ W., distant 4½ miles and the beacon on Turtle Island S.W., there is white bottom on the reef, in 5½ to 5¼ fms., steer W.S.W., the soundings being regular; some of the spots, however, give half a fathom less than the clear bottom. Give the beacon on Turtle Reef a berth of half a mile, and when the beacon bears S.E. ¼ E., haul up S.W. ½ S., until the beacon bears E. ½ N., when anchor in 5 fms. water.

The reef may be crossed at the several undermentioned places, viz.:—At Tavenier, some 20 miles to the southward of Carysfort Light-house; at Indian Cay, 16 miles

from Tavenier; at Duck Cay, and Knight's Cay; at Bahia Honda, and at Loggerhead Cay. But as all these entrances require a local knowledge when over the reef, which our present information will not assist, we defer giving the bearings into either, leaving such to a pilot's acquaintance or knowledge of the place.

CAY WEST.—Main Ship Channel.—In this channel there are $4\frac{3}{4}$ fms. water, and to take it bring the light-house on Cay West to bear N. $\frac{1}{2}$ W., and steer for it until Sand Cay Light-house bears W. by S., then steer N. $\frac{3}{4}$ W., passing just to the eastward of the entrance buoy. Continue this course through the Triangles, and keep in mid-channel between the buoys, leaving them from 100 to 200 yards distant, two on each side of the channel. When past the two upper buoys about a quarter of a mile, steer N.W. by N., from 200 to 300 yards to the westward of Whitehead Spit buoy ($1\frac{3}{4}$ mile from the Triangle buoys), until the N.W. angle of Fort Taylor is just on with the Lazaretto; from thence steer N. by E. for half a mile, and anchor abreast of Fort Taylor, if without a pilot. In these courses there will not be less than $4\frac{3}{4}$ fms., and no vessel of heavy draught of water ought to proceed further than Whitehead Spit without a pilot.

If taking the Main Ship Channel in the night, bring the light-house on Cay West to bear N. $\frac{1}{2}$ W. (which, if the weather be clear, will be directly under the north Star), and steer for it, until Sand Cay light-house bears S.W. by W., when a vessel should anchor, and wait for daylight, or a pilot. A dangerous coral head, with 13 ft. water on it, lies 400 yards W.S.W. from the entrance buoy.

East Channel.—This channel carries $4\frac{1}{2}$ fms. water, and to take it bring Cay West light-house to bear N.W. by N. leaving beacon No. 5 on the port hand, steer on this course for a mile after passing the reef, until west Sambo bears E. $\frac{1}{2}$ S.; having taken the last bearing, steer W. $\frac{1}{2}$ N., one-third of a mile, until Cay West light-house comes N.W. by N. $\frac{1}{2}$ N., and run on this course, $1\frac{3}{4}$ mile (keeping the westernmost church steeple half-way between the light-house and the middle steeple), until the east end of Snipe Cay is on with the south end of Mullet Cay, bearing W. by N. $\frac{3}{4}$ N., when steer on this latter range until the light-house bears N.E. by N. $\frac{1}{2}$ N.; you may then follow the former directions. The least water on these lines is $4\frac{1}{2}$ fms., but the N.W. by N. $\frac{1}{2}$ N. course runs within 60 yards of a 14 ft. head, and 200 yards of 10 and 17 ft. heads.

West Channel.—This channel carries 5 fms. water, and to take it you must bring the Western Dry Rocks, No. 2 beacon, in range, with Sand Cay light-house bearing E. by N. $\frac{1}{4}$ N., then bring Cay West light-house to bear N.E. $\frac{1}{2}$ E. and steer for it, or open the east end of Mallet Cay just open to the westward of Cay C., on a bearing of N. $\frac{3}{4}$ E. Run in on this range until Cay West light-house bears N.E. $\frac{1}{2}$ E., and steer for it. Keep this course until the Middle Ground Rocks beacon No. 3, is on with Sand Cay light-house, on a bearing of S. by E. $\frac{1}{4}$ E., then steer N.E. by E. $\frac{1}{4}$ E., $3\frac{1}{4}$ miles towards Rocky Point, until the N.W. angle of Fort Taylor is just on with the Lazaretto, bearing N.E. by N. $\frac{1}{2}$ N., and steer in on this range $1\frac{1}{4}$ mile, until Whitehead Spit buoy bears S.E. by E., when follow the first directions.

There are no less than six other channels into the harbour of Cay West from the southward, but it would be highly imprudent to take them by written directions without the aid of a pilot, or being yourself locally acquainted with the marks, &c. Indeed a pilot is indispensable for a stranger.

N.W. Channel.—To enter this channel by day, bring the light-house to bear S. by W. $\frac{3}{4}$ W., or in range with the buoy on the bar, and the western end of Mullet Cay; then run on until the bar is crossed, and buoy No. 2 is made, when haul up S.E. $\frac{3}{4}$ E., for buoy No. 1. The banks on each side of the N.W. channel are plainly visible, and will serve as a guide.

To enter the N.W. Channel at night, bring the light to bear S. by W. $\frac{3}{4}$ W., and run on that course until Cay West light bears S.E. $\frac{1}{4}$ S., then haul up for it, and when in 3 fms. come-to for the night. At night without a pilot, vessels run great risk of getting on shore.

During the recent survey by the officers of the U.S. Navy several dangerous coral heads and shoals were discovered, that had not been marked on the former charts; it therefore behoves every one to be most careful in navigating among these low cays and dangers.

It will readily be perceived that the passages hitherto noticed through the islands and reefs towards Richmond Bay, to be calculated for small vessels which may be desirious of using them in their way to the West Coast of Florida, &c. Of these, the latter by Cay West, or Egmont Channel, is the most frequented; but to the westward are two others, of larger dimensions and deeper water, calculated for ships of all descriptions. The first of these is on the Western side of the Mangrove Islands, 13 or 14 miles from the entrance to Egmont Channel; it is called the Boca Grande, or the Great Mouth, having the Mangrove Island Bank on its starboard side, and the Marquesas Shoals and Islands on the port. The other or Tortugas Channel, is between the Marquesas and the Dry Tortugas.

The Boca Grande Cay lies about 13 miles to the westward of Cay West, and is a very much smaller island than Cay West. It lies about N.W. $\frac{1}{2}$ W., 8 miles from Sand Cay light-house, and about S.W. $\frac{3}{4}$ W., nearly 8 miles from the screw-pile light-house in the N.W. Channel of Cay West. This island and the Lavinia Banks, to the northward, form the eastern side of the channel of Boca Grande.

The Boca Grande is the large opening to the eastward of Marquesas Cay, and between that island and Boca Grande Cay, and is 4 miles in breadth; the channel runs through to the northward, but it cannot be recommended to strangers, on account of the shoal patches of water in it.

The Marquesas Cays lie about 16$\frac{1}{2}$ miles to the westward of Cay West, and about 39 miles to the eastward of the Tortugas Islands, in lat. 24° 34′ 0″ and long. 82° 7′ 30″. The Marquesas are the westernmost of the range of the Florida Cays, and the easternmost cay is the largest of the group: it is about 3 miles in extent, from east to west, bending to the south and westward, in the form of a horse-shoe. To the westward and north-westward of the Marquesas is a large bank of quicksand, extending full 15 miles from it, and nearly due south from the western extremity of this bank lies the western end of the general Florida Reef, in lat. 24° 26′ and long. 82° 28′, being the southernmost part of the whole. There is a channel between the reef and the bank above-mentioned, and likewise all along between the reef and the cays, which is in many places upwards of 4 miles broad. In that part of the channel, to the southward and south-westward of the Marquesas Cay, there are from 5 to 11 fms. water, on soft mud.

The West End Bank of the Florida Reef is about 2$\frac{1}{2}$ miles broad, but the least water on it is 3 fms., with irregular soundings to 7 and 8 fms.; the water over it is all discoloured with white and brown patches of sand and coral-rocks, and the bottom is plainly visible. The reef in general is steep, there being from 30 to 20 fms. muddy bottom, within 1 or 2 miles of it.

TIDES.—The tide ebbs and flows here regularly, and the time of high water on full and change, at and within the northern entrance of the Hawke Channel, opposite Soldier's Cay, is half after 5 o'clock, and spring tides rise only 2 ft. 6 inches. To the northward of Cay Biscayne, the stream on soundings is much influenced by the winds, when it blows fresh, but with moderate breezes the ebb tide sets northward, and flood southward, and due attention to this will contribute to shorten a passage over soundings to the reef. The tides flow later, and rise higher to the westward.

The highest high tide in the 24 hours occurs about 8h. 54 min. after the moon's upper transit (southing), when the moon's declination is south, and about 22h. 16 min. when north. The lowest of the low water occurs about 6h. 20 min. after the highest water. It is high water at Sand Cay about 42 min. earlier than at Cay West.

THE TORTUGAS BANKS.

The Tortugas consist of 11 small islands or cays, and are situated on the southern edge of soundings which extend off the western coast of Florida. They are very low, and some of them being covered with Mangrove Bushes, may be seen 12 miles off. They lie about 30 miles westernmost of the Florida Cays, 90 miles from Havana, and the same distance from the nearest part of the Coast of Florida. These cays are the westernmost land, and in coming down the Gulf of Mexico, give warning of approach to the Florida Reefs in general.

The Tortugas (often called the Dry Tortugas), are generally looked upon to be very dangerous, and to a person unacquainted with them, they undoubtedly are so, especially in the night time; yet when they are known, on many occasions, they may be found both useful and convenient. They extend east and west 9 miles and north and south 6 miles. A vessel should not come nearer than 6 miles, as they have some rocky spits which extend that distance from them. To the west there is a large bank of coral rocks, intermixed with white patches of sand, on which the soundings are irregular; but as the bottom shows itself there is no danger. This bank is of an oblong form, and between it and the Tortugas Islands there is a clear channel of 3 miles wide, with soundings from 13 to 17 fms. water.

Loggerhead Cay, on which the principal light-house is situated, is in lat. 24° 38′ 4″ N., and long. 82° 55′ 43″ W., and is the south-westernmost cay of the group, which in sailing from Pensacola or the Mississippi, is the corner to be turned, and in stretching north-eastward from Cape Antonio, is the point to be avoided. A reef of coral rocks stretches about a quarter of a mile S.W. from the cay, the water on which is discoloured; and, in general, whenever there is danger, it may easily be seen in the day time from the mast-head.

The light-houses on Loggerhead and Garden Cay have been noticed in page 42.

If bound to the eastward, and meeting with a strong easterly gale, which is frequently the case in the summer, a vessel may safely anchor in 5 or 6 fms. under the lee of the long sandy island, which lies to the northward of the S.W. cay, about a quarter of a mile off shore. There is good anchorage, also, in several other places, particularly in a small snug harbour near Bush Cay, which is entirely sheltered from the sea by a large reef of rocks, and a flat shoal within them, about half a mile broad.

There is a channel 17 miles in width between the eastern cay and the west end of Florida Reef. Thirteen and a quarter miles from the Eastern Cay in an E. 6° S. direction there is the Rebecca Shoal of 12 ft., already noticed, about a mile in extent. Garden Cay Light bears west from the shoal, 17¼ miles distant. This and a reported shoal of 13 ft. to the northward are the only dangers. With care and by the aid of the lights this channel is preferable to going round the Tortugas.

The bank on the eastern side of the above channel, which stretches to the westward of the Marquesas Cays, is a dangerous and extensive bank of quicksand, on every part of which are no more than 4 or 5 ft. water. It is of a remarkable white colour, especially all along the northern edge, and may easily be avoided in the day time.

The tide between the Tortugas and Marquesas Cays sets variably through to the northward, and the ebb to the E.S.E.

The approach to the Florida Reef may be readily known in the day time by the whiteness of the water, in time to avoid all danger, and in the night keep the lead going, so as to be warned of danger at the distance of 2 or 3 miles from the edges of cays or reefs.

In the channel to the northward of Garden Cay a shoal spot of 3 fms. has lately been discovered, with 6½ and 7 fms. on each side of it.

THE WESTERN COAST OF EAST FLORIDA.

At the back, or rather to the northward of the Florida Reefs, is Chatham Bay, which comprehends the space between Cape Sable and Cape Romano, and called also Bahia Ponce de Leon. It has several rivulets running into it, but is frequented only by small craft, for the water is of so little depth, and the flat extends so far from shore, that it is wholly unfit for the navigation of large vessels; at the distance of about 30 miles from land, there are not more than 6 fms., and the depth gradually decreases towards the shore.

CAPE SABLE is the south extreme of the Florida Peninsula, and about midway between the Cape and White Bluff or N.W. Cape is a slightly rounded projection, called Palmer or Middle Point. At the extremity of Cape Sable is Fort Poinsett. White Bluff or N.W. Cape is 12 miles N.W. by W. of Cape Sable, from whence N.W. 50 miles is Cape Romano.

Cape Romano, or Punta Larga, is a prominent projection in lat. 25° 51′, and long. 81° 57′, whence the coast curves suddenly to the eastward for about 8 miles forming Gullivan's Bay. From the cape, shoal water runs off to the southward and south-westward about 8 miles, which protects an anchorage for coasters in Gullivan's Bay. To the north of Cape Romano is Caximbas Bay.

N.N.W., 40 miles from Cape Romano is Sanibel Island, and at a short distance from this island is a large bight, called Oyster Bay, which is about 10 miles wide at the entrance, and thickly studded with cays.

Punta Rasa, to the N.E. of Sanibel Island forms the south point of the River Caloosahatchee, and near to the point is Fort Dulany.

N.N.W. of Sanibel Island the shore is fringed with cays, which extend across the front of Charlotte Harbour, on the same line of bearing, and terminate abreast its south end in lat. 26° 27′, and long. 82° 10′.

The islands are named (from the northward) Gasparilla, Lacosta, Captive, and Sanibel the first three being each about 7 miles in length, and the last 10 miles. Between these islands are small openings leading into Charlotte Harbour.

CHARLOTTE HARBOUR.—This is a considerable place, though not so large as Tampa Bay; it exends about 30 miles north and south, and is about 10 miles broad, with many islands in the interior, but mostly towards the S.E. and N.W. parts of the harbour, leaving that part to the north-eastward clear.

The Northern or Gasparilla Pass, is in lat. 26° 50′, and carries about 4½ ft. Bring the tall pine trees on the mainland to bear N.E. in 4½ fms.; steer towards them on the north side of the pass, and run in to 5 fms. and anchor.

The Boca Grande is 7 miles to the southward of Gasparilla, between that and Lacosta Cays, and carries 16 ft. water through. This pass is about three-quarters of a mile wide, and when standing in for it, when at the distance of 4 or 5 miles, endeavour to bring the south end of Gasparilla Island N.E. ¾ E., and steer for it, when you will pass close to a buoy in the entrance of the channel. When within 1½ mile of the cays, or about half way in from the buoy, alter course to pass midway between the islands to the anchorage, half a mile within the entrance in a depth of 30 ft. The banks which enclose this channel have 3 to 10 ft. on them, and extend 3 miles from the cays. Here the tide runs in and out at the rate of 2½ knots.

The Boca Captivea or Captive Pass is 7 miles to the south of the Boca Grande, and carries 6 ft. The approach to this pass is from the southward, three-quarters of a mile from the land. To cross the bar in the deepest water the course in is north, and when within it bear to the N.E. to the anchorage off the north end of Captive Island.

The Boca Ciaza or Blind Pass is 6 miles to the southward of the Captive Pass, and between Captive and Sanibel Island, but is of no note in navigation, as there is only water for boats into a lagoon communicating with Charlotte Harbour.

Sanibel Pass is the southern pass into Charlotte Harbour, and is between the eastern end of the island and the main, and carries 8½ ft. (perhaps 10 ft.) On taking this opening approach it from the southward, and bring Punta Rasa to bear N.W. at the distance of 2½ miles, steer on this bearing, which will give the deepest water, inside of Sanibel Island, to the anchorage.

The banks in the interior of Charlotte Harbour are said to produce the finest fish and oysters on this coast, and the woods abound in game and deer.

There is anchorage in 2 fms., well sheltered from all winds off the south of Sanibel. Great attention, however, must be paid to the lead, for shoals extend out from the island and the cays to the S.E. of it, to the distance of 4 miles.

The coast from Charlotte Harbour takes a N.W. by N. direction for about 40 miles to Tampa Bay.

TAMPA BAY is an extensive estuary from 6 to 10 miles wide, extending from Egmont Island in a N.N.E. direction about 22 miles, when it forms two arms, the easternmost called Hillsboro' Bay being about 4 miles wide and 7 miles long, north and south; the other arm about 12 miles from S.E. to N.W., and 6 miles broad. At the head of the former is Fort Brooke and Tampa Village, and at that of the latter the settlement of St. Helena.

The bay is sheltered by Anna Maria and Passage Cays to the southward, Egmont and Mullet Cays to the westward, and Cabbage and Arenosa Cay to the north-westward. From each of these cays a shoal runs out to the westward, and which form the entrances of the bay.

The outer part of the estuary is greatly obstructed by a middle ground of hard sand, with depths from 8 to 12 feet, which stretches two-thirds of the way across from the western shore. Vessels of 18 feet, however, can pass round the east and north sides, and thence down a lane of deep water on the west side of it, to a secure anchorage in 4 or 5 fms., within a short distance of Piney Point. Those drawing 10 ft. may get up nearly to the head of both arms. A pilot may be had at the light-house, on Egmont Cay.

Light.—On the northern point of Egmont Cay, at the entrance of the bay, in lat. 27° 36′ 4″ N., and long. 82° 46′ 29″ W., is a white brick tower 86 ft. above the sea, showing a fixed light, visible 15 miles.

Directions.—In approaching the North Channel, keep in 5 fms., until Egmont Light-house bears E. by S., when steer E. ½ S., crossing the bar in not less than 19 ft. at low water. The banks on either side of the channel, and at the north end of Egmont Cay are steep-to, and the edges easily seen.

The passage between Egmont and Passage Cays carries 17 ft. at low water, but is so tortuous as to be seldom used. Coasters can pass in close round the north end of Palm Cay. There is anchorage to the eastward of Egmont Cay, in 4 or 5 fms., but the bottom is hard. Wood and water may be easily obtained from the neighbouring shores, and fish in the greatest abundance with the seine.

It is not prudent for a stranger to attempt to enter without a pilot, as it is very probable that the channels have undergone some changes since the survey was made, and which the above directions apply to.

To the north of Tampa Bay the coast and cays trend to the N.N.W. and North, a distance of about 90 miles to the Cedar Cays. In the above space are the cays north of Tampa Bay, the northernmost of which are the Anclote Cays and River. The Wekiwahee River and town of Bayport lies 12½ miles N.N.E. from the Anclote Cays, and farther northward are the Rivers Chassahowitzka, Homosassa, Crystal, and the We-thlocco-chee.

Vessels bound hither, or to any of the adjacent rivers, should obtain a pilot at the Cedar Cays, for it is extremely hazardous for a stranger to approach this shore without one, or to rely upon any directions he may have received.

St. Martin's Reef appears to skirt the coast between the Crystal and Anclote Rivers, at about 5 miles from the land, but its limits are yet undefined and uncertain. Outside the reef, in a depth of 9 or 10 ft., the coast is not visible.

The CEDAR CAYS are a cluster of small sandy and mangrove islets, closely grouped together, the outermost called North, Sea Horse, and Snake, being about a mile apart on a north and west range. All of them are fringed more or less with sand and oyster banks, dry in many places, at low water, leaving intricate winding channels into good shelter for small vessels.

Buoys and Beacons.—SPIT BUOY.—On the outer spit of the Sea Horse Reef, at 11 miles S.W. by S. ½ S. from the light-house on the cay; this buoy lies in about 4½ fms.

IRON BEACON, called the SEAHORSE REEF BEACON, is erected on the outer 6 ft. edge of the reef, on about the same bearing from the light-house distant 6¾ miles, and about 4 miles from the spit buoy.

E. ½ N., 2½ miles from the spit buoy, is the outer buoy of the Sea Horse Channel, coloured black and white in perpendicular stripes; and from this buoy in a N. by E. ½ E. direction, at about 2 miles apart, are three other striped buoys, marking the fairway or deep water channel up to the bar, where there is a black buoy in 9 ft. at a similar distance from the last striped buoy. This black buoy lies S. by W. ½ W., 1¾ mile from the light-house, and S.W. ½ W., 2¾ miles from the west end of Snake Island.

The above buoys and beacons are given according to the U.S.C.S. of 1872, as published in the Report, but it is uncertain if the buoys retain their position for any great length of time without occasionally being altered.

Light.—On Sea Horse Cay, at the eastern end of the mound, in lat. 29° 5′ 49″, N. and long. 83° 4′ 46″ W., a fixed light varied by flashes every minute. The light is 75 ft. above the sea and visible 14 miles.

Dangers.—SEA HORSE REEF extends S.W. by S. ½ S. from Sea Horse Cay, over 10 miles, with from 10 to 14 ft. water on its outer end. Just outside the bar it is 1¾ mile wide, between the 12 ft. curves, and quarter of a mile wide at its end. There is 5 ft. water only 3½ miles from its end. It is steep-to, from 18 ft. on its western side for 9 miles from its south end, and on its eastern side for 4 miles from its end. Beyond these distances it shoals gradually to 12 ft. There is good anchorage under the east side of Sea Horse Reef; in westerly winds.

EAST BANK, on the east side of the channel above the bar, has but 1 to 2 ft. on its edge.

WEST BANK, on the west side of the channel to the southward and south-westward of Sea Horse Cay, has from 1 to 3 ft. on its edge.

Directions.—In hazy or thick weather, when Sea Horse Cay light-house can be seen but a few miles, if bound from the southward run up the meridian of the cay in 83° 5′, sounding very carefully after striking 4 fms. and anchor when in 2 fms. if the light-house or cay is not in sight.

If from the westward, either run down the parallel of 29° 4′, two miles south of that of the light-house, tracking to the southward around Sea Horse Reef in not less than 4½ fms. water, until well past its point to the eastward, and you are by your reckoning on, or near, the meridian of the light-house; when run towards it, sounding very carefully; or run down the parallel of 28° 54′ two miles south of the end of Sea Horse Reef, until well past it to the eastward when proceed as before.

There is a channel over the upper part of the Sea Horse Reef of 7 ft., leading to the bar, but no directions can be given to be of use. In moderate weather the lead

and eye are the best guides. During moderate weather these channels all show plainly, as do the various reefs, but during heavy weather the water becomes clouded with sand, and they are not so plain. There are almost constant breakers and rips on the banks and shoals, except in a long calm spell.

Main Ship Channel.—Being in not less than 4 fms. water, bring Sea Horse Cay light-house to bear N. by E. ½ E. Run in on this course and bearing, until on the bar with 9 ft. water, and with Bird Cay just shut in behind the west end of Sea Horse Cay, 1¾ mile distant from the light-house ; then the course over the bar, and up the channel between East and West Banks to the anchorage is N.E. ½ N., 1½ mile towards the little mound on the east side of Depôt Cay, until Bird Cay and the highest mound on the east side of North Cay are just open to the eastward of the light-house, which will be in 12 ft. water, hard bottom. From this the course is N. ½ W. for nearly 1 mile, until Bird Cay is on with the mound on the S.W. point of North Cay, with from 12 to 15 ft. water. Above this to the Depôt Cay the channel is narrow and crooked, 10 ft. being the best water that can be carried through it, mean low tide. This channel is marked by numerous stakes which are arranged as the channels require them.

North Cay Channel.—The marks for the outer entrance of this channel are the mound on Snake Cay, just open to the northward of the light-house, and the north end of the Middle Cays on with the south end of North Cay. The channel is very crooked and narrow, but leads towards the south end of North Cay, close into which it runs. After passing which, it turns to the westward and W.S.W. gradually, until Bird Cay bears west about 1 mile, when it turns gradually to the northward and eastward, directly for the head of the wharves of Depôt Cay. Five feet only can be taken into this channel, and but 7½ ft. through above.

North-West Channel.—Bring Bird Cay just open to the northward of Snake Cay, and the north end of the large mound on Depôt Cay, just on with the south end of the larger mound on the upper part of North Cay where there is 13 ft. water. The course is then N.E. ½ E., a little over 1 mile, taking over 8 ft. water to the mouth of the channel in 10 ft. water, when Snake Cay will be on with the south end of the large mound on the North Cay ; and the north point of North Cay will be on with the south point, the north end of Middle Cays, and the south end of Depôt Cay. The course is then E. ¼ N. for 1 mile, until North Cay bears south ; the channel then becomes so narrow and crooked that directions would be useless. It runs irregularly to the eastward for 1 mile, then gradually turns to S.E. by S. another mile, and then quite rapidly to the eastward and north-eastward to Depôt Cay. Only 7½ ft. can be taken through this channel.

Tides.—It is generally high water at 1h. 13m. ; but when the moon's declination is greatest at 2h. 10m., and low water at 1h. 17m. Mean rise and fall of tides 2.5 ft.; mean ditto of spring tides 3.1 ft.; mean ditto of neap tides 1.5 ft.

The highest high tide in the 24 hours occurs about 12h. 47m. after the moon's upper transit (southing) when the moon's declination is south, and about 1h. 35m. after that transit, when north. The lowest of the low waters occurs about 7 hours after the highest high water.

The tides are regular except in storms, when they are completely reversed ; southerly winds increase, and northerly ones decrease the height sometimes as much as 3 ft.

Suwanee River is the only stream of any importance that disembogues about 10 miles from the N.W point of Waccasassa Bay. The upper part is well settled, and cotton, sugar, and tobacco are brought down by the river steamers, and conveyed to the Cedar Cay Harbour for shipment. The stream discharges itself by two outlets, the southernmost of which has 5 ft. over the bar at high water, but the other is too shallow for navigation.

A horse-shoe reef runs across the front of both openings, sheltering Suwanee Bay, which latter is equally shoal.

The coasts from the N.W. extreme of Waccasassa River takes a N.W. direction for about 70 miles to Ocilla River ; the coast all along is low and marshy, and in this space several small streams reach the Gulf of Mexico, and there are a few shallow bayous, but the approach to it is so obstructed by shallow flats, that vessels of even very light draught can scarcely get sight of the land. The shoals are estimated to extend out from some parts from 15 to 18 miles ; at 30 miles there are but 5 and 6 fms. water, and at 6 miles from 6 to 7 ft.

Ocilla River.—The entrance to this stream is about 4 cables in width, but it soon grows narrower. The shores at the mouth are overflowed at high water, but the banks in the interior are clothed with live oak, which is exported. In front of it a labyrinth of sand and oyster banks, which are bare at low water, extend off several miles, having a tortuous, intricate channel, navigable for vessels of 5 ft. at high water, but so narrow that they cannot swing to their anchors. Some rocks also lie in the way, and at about 3 miles up from the entrance, a ledge runs right across from shore to shore, which is only passable to boats.

There is anchorage, but not safe, in 3 fms., 6 or 7 miles from the entrance, which, however, cannot be discovered at that distance.

From the Ocilla River a low marshy coast runs W. by S. about 10 miles to St. Mark's.

Vessels bound to Ocilla River should obtain a pilot at St. Mark's.

St. Mark's River.—This river is at the head of the bay of Appalachee, and the town of St. Mark's is situate near the entrance of a branch on the eastern side, about 8 miles from the Gulf of Mexico. This river is considered the seaport of Tallahassee, where great quantities of cotton has of late years been shipped. Higher up the main stream the river takes a north-westerly course, and is called the Wakell.

The entrance of the river is low, but with some woody land on the eastern side, and also on the western side farther up the river. The width of the entrance is nearly a mile in a N.W. and S.E. direction, gradually decreasing in breadth, and at 3 miles up the river is only a cable across. From the mouth of St. Mark's River extensive oyster beds stretch off in a S.S.E direction from each point of the river, to the distance of 2½ miles from the light-house. These beds dry in great patches at low tides, leaving a narrow channel between them, running nearly straight over an outer bar of 8 ft., and up to an inner bar of 9 ft. abreast of the light-house. At the entrance of the eastern streamlet leading to St. Mark's town are only 8 ft. water.

Light.—On the east side of the entrance to St. Mark's is a white light-house, which shows a fixed light, visible 14 miles between the bearings of N. 73° E. by the south to N. 12° W. Lat. 30° 4′ 26″ N., and long. 84° 10′ 38″ W.

Buoys.—On the bar at the east side of the channel, the light-house bearing N. by W., distant 2⅔ miles, there is a red can buoy, No. 2, in 8 ft. water, and on the west side at a short distance from the above is a black buoy, No. 1, in 7 ft. water.

At 2 miles within the above buoys on the Middle Ground, with the light-house N.E. by N., distant over three-quarters of a mile, is a red can buoy, No. 4, in 8 ft. water; and half a mile farther N. by W. on the west end of the long bar, the light-house bearing E.N.E. ¼ E., distant over half a mile is a red nun buoy, No. 6, in a little over 2 ft. water.

Other obstructions and dangers are marked by stakes.

Tides.—It is high water at St. Mark's at 1h. 20m. P.M.; but when the moon's declination is greatest at 2h. 0m. P.M., and low water 1h. 30m. A.M., mean rise; and fall of tides 2·2 ft.; springs, 2·9 ft.; neaps, 1·5 ft.

Directions.—Approaching the bar of St. Mark's, bring the light-house to bear N. ¾ W. and steer for it, until up with the buoys. Pass between the buoys steering north, and this will carry you over the bar in 9 ft. at mean low water. When in

2 fms. steer N.N.W. ½ W., for buoy No. 4, and thence N. by W. ¼ W. for No. 6 buoy. Above this the navigation is directed by the stakes on either side. If necessary, safe anchorage may be taken up below either of the two inner buoys in 2½ or 3 fms., on hard sand, fine broken shell, and a thin deposit of mud. Strangers, however, should not attempt the river without the aid of a pilot.

S.W. Cape.—This cape is the next prominent land S.W. of St. Mark's River and eastward of Dog Island; the cape is thickly wooded, with a white sandy beach, visible at some distance. It may, indeed, be said to form the eastern boundary of St. George's Sound, being about 11 miles N.E. by E. of the eastern point of Dog Island.

To the southward of the above there has always been known to be a bank of shallow water stretching some miles in that direction. This shoal, although not yet accurately surveyed, is supposed to be about 7 miles in breadth from east to west, and appears to terminate about 8 miles S. by E. from the cape, and E.S.E. 12 miles from the east end of Dog Island, where there is but 4 ft. of water. These shoals break in the calmest weather, but to those acquainted with the coast and its navigation there is said to be a swash near to the cape, carrying 6 or 7 ft., but is not at present in use. Between this shoal and the east end of Dog Island the water is shoal, and the bight should be avoided until further surveyed.

Oklokonee Shoals.—E. by S. from the S.W. Cape, at the distance of 6 miles, is the shoalest part of the Oklokonee Shoals, where there is only 3 ft. This is a detached shoal of breakers lying N.W. by N., and S.E. by S., 5 miles, and about 2 miles in width, and is not as yet correctly defined, but is said to stretch far to the eastward, to where the entrance of St. Marks would bear north. There is a channel carrying 11 or 12 ft. between it and the coast and the South Shoals, but it is little known.

APPALACHEE BAY.—From the S.W. Cape the land trends to the northward, with a slight curve to the entrance of the Oklokonee River, which is shallow and of little note; and thence to the eastward to the entrance of St. Mark's River, with several irregularities, forming a great bight, into the northern part of which the River St. Mark's discharges its waters. This bay is but little frequented, as from the shallowness of the water it cannot be navigated, very few feet of water being found at the distance of 10 miles from the western shore, and 5 miles from the northern part.

ST. GEORGE'S SOUND is formed by St. George's Island and Dog Island, more to the eastward. These islands are low, broken, and thinly wooded, but from Bulkhead Point (about 11 miles from Cape St. George) to the eastward, the coast becomes more wooded, as in other parts, excepting at Gadsden Point, which is higher land.

St. George's Island extends from the light-house in the direction of N.E. by E., 20 miles to the east end; at 3 miles from Cape St. George is the New Inlet, and the island is altogether very narrow. Three miles N.E. of the east end of St. George's Island is the west end of Dog Island, near to which is a light-house, and the eastern point is N.E. ½ E., 5 miles from the western point; this island is also narrow, forming the eastern entrance into St. George's Sound. From the east end of Dog Island the S.W. Cape of the mainland bears N.E. by E. ¼ E., 14 miles, and between these two points is the eastern entrance to the sound, which is close to the land, between the island and the breakers on the eastern side, and fit only for small vessels.

APALACHICOLA.—The western part of St. George's Sound is called the Bay of Apalachicola, on account of the River Apalachicola, which flows into the sound. This river is said to be navigable for 400 miles. The town of that name is situate at the western point of entrance to the river, and has a large trade in cotton and timber. Vessels drawing over 6 ft. water cannot get up to the town of Apalachicola, and the sound is obstructed by a shoal stretching from off the point of the city to the southward, in the direction of the east end of St. George's Island, which has only 6 ft. water upon it.

Between the Indian Pass already noticed and St. George's Island is St. Vincent's Island, the westernmost of the group forming the sea barrier of St. George's Sound. This island is 7 miles long from east to west, and 3 miles broad to the eastward, whence it gradually decreases to the northern point. At this part of the island is the Indian Pass, which has a very little depth, and only fit for boats. Between the south end of St. Vincent Island and the north end of St. George's Island is Sand Island, about 1½ mile in length W.N.W. and E.S.E., and narrow. This island forms the two passes into Apalachicola Bay, and the track-distance from the West Pass, north of Sand Island, to the upper anchorage in the bay is 9 miles. On the south-eastern point of St. Vincent Island, on the northern side of the West Pass, is a **Beacon** coloured white, of a pyramidal form, which may be distinguished at a considerable distance.

To the S.W. ½ W. of the beacon there extends a sandy flat to the distance of 2¾ miles, on which the sand-bores of Flag Island and Sand Islet are situate, and where breakers may be observed in a N.W. and S.E. direction.

Near the north-western end of Sand Island there is a clump of palmetto trees, and from that point a sand spit extends to the S.W., 2½ miles, where breakers may be observed, and it is between this East Bank and the breakers of the West Bank on the shoals off Flag Island and St. Vincent, that the bar of the West Pass is situate. On the south side of Sand Island is a narrow passage fit only for boats, where the sea some years since made a breach.

West Pass.—This pass is about 3½ miles to the north-westward of the light-house on Cape St. George, and is the principal entrance to Apalachicola, on each side of which are the East and West Banks already noticed. On the bar is generally a fairway buoy, moored 2½ miles S.W. of the entrance. To the westward of the beacon are the pilot ranges, which are of entirely different shape, and must not be mistaken for the beacon. The south point of St. George is thickly wooded, and can be distinguished when in 10 fms. bearing N.E.

Light.—On Cape St. George, the S.W. extreme of the island, a white light-house is erected 73 ft. above the sea, showing a fixed light, visible 14 miles, between N. 65° E. by the south, to N. 5° E.

Great caution is required when approaching Cape St. George on account of the Cape shoals, which extend some 6 miles to the southward of the Cape. We have already noticed that the trees of the south part of St. George's Island about the cape may be seen when in a depth of 10 fms.

Directions.—To cross the bar of the West Pass, you must bring the light-house of Cape St. George to bear E. ½ N., and the beacon on the point of St. Vincent Island N.E. by N., and steer N. by E. ¼ E.; this will cross the bar in 13 ft. at mean low water. Keep this course until the light-house bears E. by S., when steer N.E. ¾ E. until the beacon bears W.N.W. and the light-house S.E. ¼ E., then steer E.S.E. 3¼ miles. When the channel stake bears N. ½ W., haul up N.E. ½ N., which course you must keep until the town of Apalachicola bears N.N.W. ¼ W., and anchor in 11 ft. at mean low water.

When inside the points of entrance to the N.E. of Sand Island, vessels may anchor in from 3 to 3½ fms., with good holding ground.

Cape Shoals.—A very dangerous bank extends to the southward 6 miles from Cape St. George, which appears to be composed of detached reefs, terminating in 3 fms. depth with the light-house bearing about N. by W. There are several channels over this shoal, but the only one to be used is 4 miles from the land, having 17 ft. through it, least water.

Vessels bound to the eastward from the bar of the West Pass should steer S.E. until the light-house on Cape St. George bears N. by W., then haul up east, and when in 5 fms. the shoals have been cleared. When crossing the shoal the lead should be kept constantly going, as the set of the currents is always uncertain.

If bound to the westward through this channel, when about 4 miles from the

land, and in 5 fms. water, bring the light-house to bear W.N.W., and steer west until it bears N. by W., then steer N.W. in 4½ fms. Continue on this course if bound to Apalachicola.

About 3 miles to the eastward of the light-house the island of St. George is broken by a pass called the New Inlet, carrying but 8 ft., and at present not capable of being used.

Middle Entrance.—The next pass into the St. George's Sound is 23 miles to the eastward of the light-house, and 2½ miles from the eastern point of the Island St. George. This was formerly called the East Pass, until a more easterly entrance was discovered round the north end of Dog Island.

Dog Island, being the easternmost of the low narrow islands that forms St. George's Sound, lies about 3 miles from the land, and is about 5½ miles long E.N.E. and W.S.W., and, like St. George's Island, is not over a mile broad, and has wood about the centre of the island.

Light.—About 1 mile east of the western extremity of the island, a fixed light, varied by red flashes every minute, is shown from the top of the keeper's dwelling. This light is 45 ft. above mean-tide level, visible 12 miles. (*This light-house was destroyed in a hurricane in* 1873.)

The dwelling supporting the lantern is painted white, and stands on five iron-screw piles, painted black. The old tower, dismantled of the lantern, has been left standing, but it may at any time be washed away by the waves. Its colour is white.

The two points of the islands forming the Middle Pass lie N.E. and S.W. of each other, distant nearly 3 miles. Across this entrance a sand-bank extends having as little as 5 and 4 ft. in some places; but through this sand-bank is a channel carrying 14 ft. at mean low water, which may be recognised by the breakers on either side of the fairway.

This channel is marked by several buoys, the outer buoy being moored on the outside of the outer shoal water of 15 ft., S. by W., 2 miles from the light-house, it is a vertical striped buoy. At nine-tenths of a mile N.N.W. ¾ W. of the above buoy is a black buoy, marked No. 1, in 13 ft., on the eastern edge of the West Bank. About a mile farther on in the same direction on the east side of the Middle Ground, and marked No. 3, is another black buoy; and a mile to the S.W. of the Middle Ground buoy is a third black buoy on the northern side of the West Bank, marked No. 5; another buoy called the Marsh Point buoy, and marked No. 7, lies about 1¾ mile from No. 5 buoy.

Directions.—The middle entrance into St. George's Sound is rather difficult for a stranger to make out, as the west end of Dog Island and the east end of St. George's Island are both low sandy beaches, and there is a sand beach on the main, directly in front of the passage, so that it looks, at 3 or 4 miles distance, like one continued beach. In making for the entrance the light-house will point out the eastern side, and when in 4½ fms., with the light-house bearing north, steer N.N.W. ½ W., and it will lead to the outer buoy of the bar. Keep this course until abreast of Dog Island Point bearing N.E. by E. ½ E., when haul up S.W. ¾ W. for the anchorage off Marsh Point. For the Swash Channel, which carries 13 ft., and is to the southward of the Middle Ground, stand in as before directed until Dog Island light-house bears N.E., then steer W.N.W. ½ W. between No. 3 and No. 5 buoys, and when the water deepens to 3¼ fms., haul up for the anchorage.

The channel is liable to alter, and the buoys are shifted accordingly by the pilots, who generally rendezvous at a place called Pilot's Cove, just inside to the eastward of Dog Island Point. In this cove the depths are 3 to 3¼ fms. pretty close to the shore, and the point of the island is steep-to.

A New Channel, called the East Pass, discovered by Lieutenant Duer, U.S.C.S., leads from the sea to St. George's Sound, close in with the N.W. shore of Dog Island, with 20 ft. in the channel-way, but only 17 ft. on the bar at high water. By

this channel vessels may be carried from sea to good anchorage in $3\frac{1}{4}$ fms. under a reef, off the north side of that island.

To enter this channel, bring the light-house on Dog Island to bear west, and the S.W. cape N.E. $\frac{1}{2}$ N., you will then be in $5\frac{1}{2}$ or 6 fms. water, and should steer north until the east end of Dog Island bears S.W. by W. $\frac{1}{2}$ W., or until the water shoals off the east point of Alligator Harbour. From hence steer W.S.W. for the anchorage in $3\frac{1}{4}$ fms. inside the reef; the reef will be easily discerned by the breakers and discoloured water. It would be unsafe to go beyond the $3\frac{1}{2}$ fms. anchorage under the reef without a pilot. Between the above reef and the S.W. cape the channel is said to carry not less than 31 ft., lessening to 24 ft. well in under the mainland.

SAILING THROUGH THE GULF OF FLORIDA.

If the weather be thick when about to take your departure from Cuba, and there is no object in view, it would be far more prudent to lie off that island for a day or two, than to run the risk of shipwreck.

You may round Cape St. Antonio either to the eastward or westward of the Sancho Pardo Shoal, but you must be cautious not to go nearer than 2 or 3 leagues of the land with the deep-sea lead going.

If the deep-sea lead was frequently used, there is reason to believe it would prevent many disasters, for though the ground be not yet known with that degree of accuracy as to point out from off what part of the Martyr Islands a vessel must be, yet the soundings everywhere give warning of the vessel's approach to the reefs. Those on the Bahama side are not so regular; near the bank of Double-headed Shot Kays and to that of Great Bahama, a vessel must be pretty close before she will find bottom.

The following remarks are by Mr. Middlemist:—It is of the greatest consequence to know which shore you are nearest to; indeed, it seems to be the only thing to be depended upon for making a safe passage through.

It is recommended by some persons to keep a certain parallel of latitude, and to beat up in the strength of the stream; but however this practice may be sometimes preferred, I should never be induced to follow it, as you cannot see either side of the Gulf of Florida; nor would I advise other persons to do so, for it is attended with great risk.

You should see the land at least once in 24 hours while to the southward of Cape Florida; this is easily done by working on the Florida side. Be inshore in the evening, and stand off 8 or 10 leagues during the night, in again next morning, and so on, by which means you will always know how to shape a course should the wind come fair in the night, because you are certain which side you are nearest to.

Suppose in the other case the land had not been seen for 3 or 4 days, you would possibly be much perplexed how to steer a safe course on a sudden change of wind in your favour; and even if you considered your reckoning right, and were to shape a course which was also considered right, to take you clear of all dangers, I am of opinion you would not know how to act did you fall in with breakers right ahead, by being uncertain what side you were upon, and that in so dreadful a situation you would be liable to put your helm the wrong way, and it would be impossible to act with that promptness you would do, if you knew which side you were upon. Therefore be guarded against a disaster which is likely to happen to those best acquainted, and always see the land as often as possible, or at least once in 24 hours.

The deep-sea lead should be hove frequently in the night, because there are soundings on the Floridas, and also on the Bahamas, which you will obtain before coming to the shoals; and this precaution may sometimes save your ship from being lost.

It is needless to say there ought to be an anchor clear, cable range, &c., as every prudent navigator will see done while he continues in the Gulf of Florida.

Time of High Water on Full and Change Days.

PLACE.	High Water Full and Change.	Springs Rise.	Neaps Rise.
	H. M.	Feet.	Feet.
Cape Henry	7 40	4	...
„ Charles	7 45	5	...
Old Point Comfort, Ent. Hampton Roads....	8 17	3	2½
James River { City Point	2 11	3	2¾
James River { Richmond	4 28	3½	2¾
York River (Moody's Wharf)	9 35	3½	...
Piankatank River (Cherry Point)	10 5	2	¾
Point Lookout	12 32	2	1¼
Rappahannock River { Tappahannock	12 42	2	1½
Rappahannock River { Saunder's Wharf	3 2	2¾	2
Annapolis	4 38	1	1
Chester River (Rockall Creek)	5 23	2¼	1
Bodkin Point (Entrance, Patapsco River)	5 42	1¼	1
Baltimore	6 33	1½	1¼
Hatteras Inlet	7 4	2¼	2
Ocracoke Inlet	7 4	2½	2
Beaufort Harbour	7 26	3¼	2¼
Cape Fear River, Smithville	7 19	5½	3¾
„ Wilmington	9 6	3	2¼
Winyah Bay Entrance	7 56	4¾	3¼
„ Georgetown	8 40	4½	3½
Bull's Island Bay	7 16	5¾	4½
Charleston, Cas. Pinkney	7 26	6	5
North Edisto River	7 10	7	5¾
St. Helena Sound	7 8	7½	6
Beaufort, Port Royal	8 2	8½	7¼
Hilton Head	7 16	7¼	6¼
Savannah River Entrance	7 22	7½	6½
„	8 13	7½	6¼
Sapelo Sound	8 33	7¾	6½
St. Catherine Sound	8 37	8	6½
Ossabaw Sound	8 19	8	6½
Doboy Light-house	7 33	7¾	7
St. Simon Island	7 43	8¼	6¾
Cumberland Sound, Fernandina	7 53	6¾	6¼
St. John River	7 28	5½	5
St. Augustine	8 21	5	4
Lower Matacumbe Bay	8 23	2½	1¾
Cape Florida	8 36	1¾	1½
Indian Cay	8 23	2½	1¾
Sand Cay	8 40	2	1
Cay West, N.W. Channel	9 10	1½	1¼
„	9 30	1½	1¼
Tortugas	9 56	1½	1
Tampa Bay	11 21	1¾	1½
Cedar Cays	0 51	3¼	2½
St. Mark's	1 14	3	2¼
Apalachicola Bay	...	2½ to 4	...
St. George Sound, Mid. Ent.	1 31	1¾	1¼
„ „ West Ent	...	2½ to 4	...

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